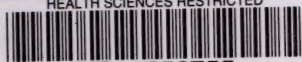


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EDITED BY  
**L. P. BETHEL, MD., D.D.S.**  
(COLUMBUS, OHIO)

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# REGULAR CONTRIBUTIONS

## THE DENTAL SUMMARY

THE MAGAZINE THAT HELPS

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January, 1919

No. 1

### CHRONIC DISEASES OF THE MOUTH

BY K. H. THOMA, D.M.D., BOSTON, MASS.

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THE MOUTH is frequently the seat of chronic diseases which may exist for a long period without giving local symptoms. The patient, having no discomfort in the diseased part, is usually unaware of the condition. As no special complaint is made, such chronic diseases sometimes develop under the very eyes of the general practitioner of dentistry. But these conditions are just the ones which so frequently are the cause of obscure symptoms in neighboring parts or foci of somatic diseases. A review of the pathology and diagnosis of chronic diseases of the oral cavity should, therefore, be of interest to both the stomatologist and the physician.

#### CHRONIC INFECTION OF THE JAWS

Chronic infection of the jaws may be the termination of an acute type, but more often they occur independently, developing and growing without giving symptoms or discomfort. Two classes may be distinguished, the circumscribed and diffuse forms. The circumscribed forms are common and receive special names in dental nomenclature, according to their development or cause.

A. *Chronic Alveolar Abscess.* This is the condition which follows the acute abscess or old-fashioned gum boil. It is due to neglect or unsuccessful treatment and we frequently find sinuses on the face or in the mouth which are, as a rule, the only indications of the lesion. The discharge of pus may be more or less marked, sometimes stopping and then becoming greatly aggravated. The sinus cannot be closed successfully unless the cause of the chronic abscess is removed, and this is usually a tooth with a diseased pulp or a necrotic root end.

B. *The Dental Granuloma or Blind Abscess,* one of the most common forms, is a reaction to a mild injury, causing an inflammatory proliferation of the peridental membrane. It is characteristic of the lesion to start and continue to grow for a long time without the patient's



knowledge and without symptoms of inflammation. The granuloma, which grows in the cancellous part of the bone, causes a carious condition, illustrated in *Fig. 1*. It is attached to the end of the tooth root



*Fig. 1.*—Specimen of skull showing bone destruction due to chronic inflammation at the apex of the upper second bicuspid bearing the gold crown.

and surrounded by a fibrous capsule, through which a great many blood vessels pass. The inner part is made up of inflammatory granulation tissue (fibroblasts and vascular endothelium), infiltrated by a large



*Fig. 2.*—Dental granuloma at the apex of a root. Specimen stained with Mallory's Phosphotungstic Acid, Haematoxylin stain. Note the fibrous capsules surrounding the granuloma and several places where necrosis has occurred.

mass of plasma cells and a smaller number of leucocytes, lymphocytes, eosinophils and mast cells, (*Fig. 2.*) Epithelium may be found proliferating through the granuloma (*Fig. 3*), due to the inflammatory stimulation of epithelial remnants from the enamel organ. One or more places may be found where necrosis occurs. Polymorphonuclear leucocytes then accumulate in large numbers and, if the destructive



Fig. 3.—Dental granuloma at the apex of a devitalized tooth. This is a case which may develop into a cyst. Note the epithelium lining the small lumen and the effort of the epithelium to proliferate over the large lumen. Also note the many cholesterol spaces

process becomes extensive, an outlet to the surface or sinus is formed and the condition is evidenced in a sub-acute attack, (*Fig. 4.*) Other retrograde processes are often observed in the blind abscess or dental granuloma, such as fatty degeneration, hyalin formation and, in old granulomata, cholesterol formations, which can be recognized by the rhomboid spaces left by the crystals, which dissolve during the hydration in alcohol. The root end nearly always becomes necrosed and is often partly absorbed, as seen in *Figs. 5 and 6*. This increases the chronicity of the disease and is the reason why medicinal treatment of such teeth is usually a failure.



These lesions seldom spread to neighboring teeth, but occasionally grow into periodontal cysts of large dimensions. Toxins and bacteria are absorbed and clinical evidence is at hand to prove that various somatic diseases are due to blood-carried infection or intoxication.

*Diffuse Osteomyelitis of the Jaws.* Fortunately the infections of the



Fig. 4



Fig. 5

Fig. 4.—Dental granuloma at the apex of a root. Specimen stained with Haematoxylin eosin. Note the epithelium on the right side of the picture and the sinus filled with pus cells, caused by a sub-acute attack.

Fig. 5.—Dental granuloma at the apex of a root showing necrosis and absorption of the root end, involving both the cement and the dentin.

jaws almost always remain localized; and if we consider the frequent occurrence of dental infections involving the jaws it is surprising how rarely one encounters a case of diffuse osteomyelitis. Such a condition, affecting the mandible, is well exemplified in the following case, (*Fig. 7*): The patient, Mrs. L., a woman twenty-six years old, married and doing housework, had been in perfect health. December 24, 1915, the patient had a tooth "capped" by her dentist. December 26th, the tooth was extracted by another dentist on account of an abscess. December 28th, the patient went to the hospital and received palliative treatment. January 18, 1916, she complained of pain in the lower jaw, inability to open her mouth and soreness of the teeth. (Temperature 99.5° F.) Examination revealed that the only teeth of the mandible present were the front ones from the left lower first molar to the right lower second bicuspid. All these teeth were extremely loose and there was evidence of the right lower first molar having recently been extracted. All the remaining

upper teeth were firm and in good condition. Roentgenograms showed a large area beneath the socket of the extracted right lower molar,



Fig. 6.—High power photomicrograph of apex of a tooth root, showing osteoclasts along the absorbed surface of the tooth root.

whence it extended around the chin to the other side of the jaw. Two Wasserman tests were negative. I operated January 20th, extracted all the loose teeth and curetted the entire cancellous part between the cortical plates, removing many small sequestra. The wound healed up rapidly. Two more small pieces of bone were expelled later. March 2nd, the patient returned with swelling and pain on the left side. Another Wasserman test made at this time was negative. A new set of Roentgenograms showed that healing was taking place on the right side, but that the process of disease had involved the left side extensively. I operated on this side March 3rd, and from then on the healing continued normally. September 18th, two more small sequestra became evident, one of which I removed from the mouth and one from the submental region. The wound healed by first intention. November 25th, an abscess seemed to point at the left angle of the lower jaw, where there was also considerable callous formation. By incision and exploration I removed a small sequestrum, but the sinus continued to discharge.

Another set of Roentgen pictures showed a normal condition everywhere except at the left angle of the jaw, where one more sequestrum



was found in the middle of the bone. This I removed, excising the sinus and closing the wound, which healed by first intention. The hard swelling on this side of the jaw disappeared gradually, so that the outline of her face is again normal.

#### CHRONIC MAXILLARY SINUSITIS

Maxillary sinusitis, especially in its chronic form, occurs much more frequently than is supposed. Patients seek relief from the discharge



Fig. 7.—Case of Mrs. L., showing diffuse osteomyelitis of the mandible.

of pus and other symptoms of acute inflammation, but the chronic disease which manifests itself more indirectly by poor general health, loss of weight, toxemia, mental depression, arthritis, or other secondary infections, is quite often overlooked. Maxillary sinusitis may be caused by either diseases of the nose or of the teeth. According to Brophy, about 75 per cent. of the cases are due to dental infection, and usually they follow the occurrence of alveolar abscesses on the teeth which are in relation with the sinuses. The teeth, therefore, should always be investigated, and it should be kept in mind that diseases of the nose may be only an exciting cause, activating an old and chronic condition.

The upper molars and bicuspid should be roentgenographed in cases of maxillary sinusitis, and the dentist, in turn, should advise his patient to have the sinuses investigated should he find suspicious conditions in films of the upper teeth.

#### CASE REPORTS

1. Patient: Mr. W. W. C.—*History:* Pain in zygomatic and infraorbital region and discharge from right nostril. A frontal Roentgen plate showed radiopacity of the right antrum. The cause was ascer-

tained by a film which showed radiolucent areas on two roots of the upper first molar, indicating abscesses. (Fig. 8.)

*Operative Findings:* The antrum was filled with polypoid growth the bone over the molar being entirely necrosed.

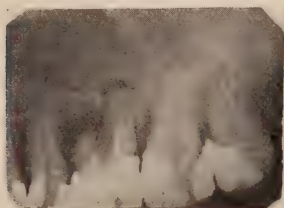


Fig. 8.



Fig. 9.

2. Patient: Miss G. W.—*History:* Complains of bad taste in naso-pharynx, but no pain whatever.

*Roentgen Examination:* Intraoral films show many teeth with evidences of root-canal work and radiolucent areas, indicating abscess conditions, which extend to the maxillary sinus. A frontal plate shows radiopacity of the right antrum.

*Operative Findings:* Large necrosed areas were found in the upper jaw and the mucous membrane of the antrum was covered with granulations.

3. Patient: Mrs. H. K.—*Roentgen Examination:* Routine Roentgen examination shows many diseased roots in the upper jaw and radiopacity of the maxillary sinus. (Fig. 9.)

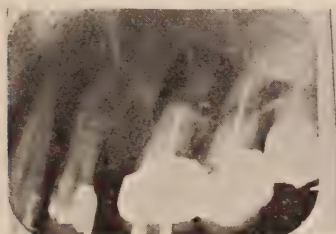


Fig. 10.



Fig. 11.

*Operative Findings:* The bone forming the floor of the antrum was necrotic, the antrum being completely filled with polypoid growths.

4. Patient: Miss A. P.—*History:* Patient was in poor health and was referred by her dentist for extraction of the left upper molar. After extraction of the tooth a probe could be passed into the antrum.

*Roentgen Examination:* The previously taken films of the teeth showed a large radiolucent area on the roots of the upper first molar. All three molars were devitalized. A frontal plate taken immediately



after the extraction showed radiopacity of the left maxillary sinus and a cyst of the right maxillary sinus. (*Fig. 10.*)

*Operative Findings:* The left antrum was filled with polypus granulation tissue.

5. Patient: Miss M. L.—*History:* Patient was in a run-down condition for a considerable length of time. Had been under her physician's care for some time, but did not improve.

*Roentgen Examination:* Showed indications of many pus pockets and abscesses in the right upper jaw. Frontal plate showed involvement of antrum. (*Fig. 11.*)

*Result of Operation:* After removing teeth and treating antrum the patient improved rapidly.

6. Patient: Mr. D. G., aged thirty-four years—*History:* Five weeks before he came to me he started to have rheumatic swellings and pains in the knees. The shoulders were next attacked, and after a short time all the large joints became involved. He was ordered to take electric baths, which he did, but with no apparent effect. When he was referred to me he was walking on crutches and was in great pain. There was no pain at all in the mouth or face.

*Roentgen Examination:* Showed radiolucent areas indicating abscesses on an upper incisor and upper molar. The antrum was suspected, and a picture taken showed it to be radiopaque.

*Operative Findings:* The antrum when opened was found to be filled with inflammatory granulation tissue, caused by the tooth which was extracted.

*Result of Operation:* Patient first suffered exacerbation, due to the surgical auto-inoculation and had to stay in bed for a few days, not being able to use his joints. He then began to improve, and after seven weeks was entirely rid of all arthritic symptoms.

#### CYSTS

We distinguish two types of cysts of the maxillary bones—dentigerous and periodontal cysts.

A. *Dentigerous or Follicular Cysts* are of comparatively rare occurrence and are caused by the tooth follicle of an unerupted, impacted, supernumerary or misplaced tooth or tooth germ. They may contain one or many well-formed teeth or rudimentary tooth masses, or they may be formed from the enamel organ without a tooth being developed. They contain no pus unless infected through an opening into the oral cavity.

*Periodontal or Radicular Cysts.* These are cysts of inflammatory, infectious origin and usually are formed by an epitheliated dental granuloma. Epithelial remnants of the enamel organ, which are normally found in the periodontal membrane, have a tendency to proliferate when stimulated by chronic inflammation and are apt to grow over the

inside surface of the granuloma. (*Fig. 3.*) Exudates accumulate in the lumen, and as they increase the cyst grows at the expense of the bone. A Roentgen picture will indicate a cyst clearly, showing a large radiolucent area, usually connected with a tooth, which is devitalized or has a diseased pulp, sticking into it. Multilocular cysts start in a similar manner. They may originate either from the formation of cysts on more than one tooth, or from the development of cysts in various medullary spaces of the cancellated part of the bone, the fluid accumulating and extending them, leaving bone lamellæ between. Sometimes periodontal cysts are found not connected with a tooth root. In such cases the guilty tooth may have been extracted previously, the cysts having escaped notice, or a granuloma may have been left at the time of ex-



*Fig. 12.*—Case of Mr. G., showing a periodontal cyst of the lower jaw, caused by a devitalized first bicuspid.

traction, which later grew into a cyst. I have observed many interesting cases of such cysts, of which I shall cite two typical ones.

The first, a man about thirty years old (Mr. G.), complained of a tender place on the outside of the face, which he noticed especially when shaving. The Roentgenogram is shown in *Fig. 12*. The operation disclosed a cyst filled with pus containing cholesterin and lined with a membrane which was covered by epithelium. It was found between the two bone plates, but the outer plate had a hole in it, as shown by the very dark smaller area under the second bicuspid in the Roentgen picture. This was the place where the patient felt the tenderness.

In another case, that of a Mr. F., the patient was unusually well until about a year before he came to me, when he broke down after a severe attack of grippe, the symptoms being those of nervous collapse. He was in the South for two months and then returned to work. Was examined at Johns Hopkins University and was obliged to give up work again and take a month's vacation in the mountains. While there he had some palpitation and dyspnea and evidently was very anemic.



For some years he suffered from hemorrhoids and on August 17, 1916, was operated on by Dr. Chittenden Hill. At this time the blood examination was as follows:

Hemoglobin.....	70%
Leucocytes.....	10,000
Red Count.....	3,000,000

Smear showed slight degree of achromia. On August 28th, the blood count was:

Hemoglobin.....	85%
Leucocytes.....	6,000
Red Count.....	5,300,000

On Sept. 18th, the blood count was as follows:

Hemoglobin.....	85%
Leucocytes.....	7,000
Red Count.....	5,120,000

The patient at this time had recovered from the operation entirely and seemed in much better general health. The white count, however,



Fig. 13.—Case of Mr. F., showing a periodontal cyst of the lower jaw, originally caused by an abscess of the first molar, which had been extracted years ago.

had increased again and the red count had decreased. A Roentgen examination on Sept. 18th, showed a large periodontal cyst of the jaw and abscesses about the roots of two more teeth. (Fig. 13.) About sixteen years ago the patient had an acute abscess on the left lower first molar, which had to be extracted. The abscess was apparently left in the jaw and grew into the present cyst. After opening into the cyst, pus which was under pressure, escaped at once. The bone cavity was lined by the usual cyst sac and contained the tip of the root of the first molar. I operated on Oct. 4th and on Oct. 11th Dr. E. A. Locke's report showed the following blood count:

Hemoglobin.....	92%
Red Count.....	5,500,000

The patient was seen again eight months later, when he reported that he had been perfectly well ever since.

The relation of these lesions to the general health of the patient is not in the scope of this paper. A large number of careful clinical observations have proved, however, that many somatic diseases are due to focal infection. The mouth is one of the important parts of the body where such foci occur, and it is essential to understand the chronic oral lesions. Their recognition, treatment and prevention becomes more possible by appreciating their etiology, their histo-pathology and their Roentgenographic appearance.

43 Bay State Road.

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## SUPPURATIVE GINGIVITIS WITH ALVEOLAR INVOLVEMENT—A NEW SURGICAL PROCEDURE\*

BY ARTHUR ZENTLER, D.D.S., NEW YORK

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**I**T IS MY intention to deal with that phase of the disease commonly known under the confusing name of pyorrhea alveolaris, which as indicated by its histopathology is a purely surgical disease and must, therefore, be treated surgically, this alone promising an expedient and a permanent cure.

For the purpose of clear presentation, I shall briefly state that I prefer to call the diseases involving the gingivæ and their soft and hard underlying and adjacent tissues by the generic name given them by Talbot, of gingivitis. Further, that for purposes of practical study, I classify gingivitis into superficial, hemorrhagic and suppurative.

The first class of the disease and the less advanced forms of the second and third classes are ordinarily amenable to proper dental treatment (scaling, polishing, etc.) in conjunction with correction of such local and constitutional disturbances as may be present.

The more advanced hemorrhagic cases, and especially the advanced suppurative cases, accompanied by degenerative processes of the alveolar bone and the soft tissues immediately covering it, are usually either traumatic, being due to long neglected accumulations of salivary calculi or other irritants (ill fitting fillings, inlays, crowns, bridges, etc.), or they are a manifestation of a disturbed metabolism due to such diseases as diabetes, syphilis, tuberculosis or chronic or acute metallic toxemias, when serumal calculi may or may not be found on the roots of the teeth, and, if present, will act as an additional irritant. Whether of traumatic origin or of metabolic or of both origins, these forms of gingivitis are

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\*Read June, 1918, before the Section on Stomatology (A. M. A.) of which THE DENTAL SUMMARY is the representative organ for the dental profession by special arrangement with *The Journal*, A. M. A.



oral foci of infection, to which other systemic disturbances are attributed; but this phase of the subject is not to be considered here, except for the purpose of stating that it is a *sine qua non* that the treatment of the oral condition must go hand in hand with the treatment of the gen-



Fig. 1.—Appearance before operation.



Fig. 2.—Flap lifted and retracted.

eral physical condition; neither can be brought to a successful issue without a rational treatment of both.

A typical report<sup>1</sup> of microscopic examination of specimens of tissues obtained from areas operated on reads as follows:



Fig. 3.—Appearance after removing all soft and hard diseased tissue.

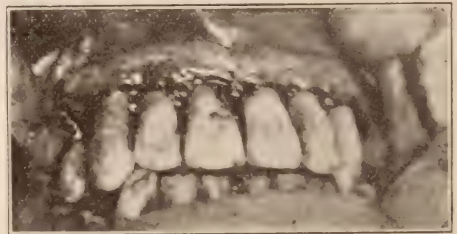


Fig. 4.—Flap replaced and sutured.

The exposed connective tissue is of sluggish granulation type, heavily infiltrated by some polynuclear and many round and plasma cells. These last cells are so dense that the stroma is obscured throughout its length inward from the epithelium. The epithelium is not remarkable

<sup>1</sup> Meeker, L. H.; From the Pathological Laboratory of the New York Post-Graduate Medical School and Hospital.

except at points where it is necrotic and desquamating. There are many congested capillaries and considerable extravasation by red blood cells throughout, and several spicules of alveolar bone are seen.

This shows that the condition present is of such character as clearly to indicate that nothing short of radical removal of all the involved soft and hard structures, going well into healthy surroundings, will render the part receptive of regenerative processes and insure an ultimate permanent cure. It is clear that an essential factor in operating on any part is that its approach be unobstructed, so that before terminating the operation, the surgeon may be certain of having actually removed all that is diseased; it is seldom, if ever, when this is not accomplished, that recurrence does not take place. This probably explains the reasons why, in advanced cases of so-called pyorrhea, very few permanent cures are affected with the treatments as generally practiced at present.

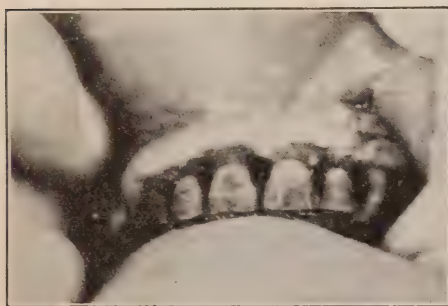


Fig. 5.—Typical appearance of upper anterior region before operation in an extensive case of suppurative gingivitis, in a patient aged 55.



Fig. 6.—Same patient as is shown in Figure 5, six months after operation.

G. V. Black<sup>2</sup> speaks of the surgical treatment of pockets, describing a method of eradicating the pocket by "cutting away as far, or a little beyond, the point to which the disease has reached, which generally means some cutting away of the margin of the alveolar process as well as the soft tissue." He speaks of there being "considerable variation in results following this treatment. The rule is, however, that something will be gained in reducing the depth of the pocket each time the overlying tissue is cut away."

From this it is seen that while the need of radically dealing by surgical methods with these cases was recognized by Black, the result was not always a success and recurrence took place; hence the need of repeated ("each time") cutting away of the pocket.

Riggs, and others since his time, operated somewhat in the way described by Black. Robitzeck, of Vienna, as long ago as 1862, de-

<sup>2</sup>Black, G. V.; A Work on Special Dental Pathology, Chicago, Medico-Dental Publishing Company, 1915, chapter on Treatment of Chronic Suppurative Pericementitis.



vised an operation for cases involving an area over several teeth, sometimes all the anterior region or the posterior region or even both regions, consisting in excising with a straight incision through the soft tissues down to the alveolar process, all the abnormally appearing gum tissue. A scraping of the exposed alveolar bone followed the excision of the soft tissue, and the patient was dismissed. In cases in which cures were effected with this treatment, the result of the straight incision was such as to leave a very unsightly aspect of the parts.

After practicing Robitzeck's operation for a number of years, I have found that it was very useful in cases of advanced hemorrhagic gingivitis and often in cases of not very advanced suppurative gingivitis. I found, however, that in somewhat modifying his technic I could obtain a more pleasing ultimate appearance and a local condition more easily kept clean.

My modification consisted in excising the diseased gum tissue, instead of by a straight incision, by following the original festoons of the gums, going well into the healthy tissue, thus leaving behind a scalloped



Fig. 7.—Typical appearance of lower anterior region before operation in an extensive case of suppurative gingivitis in a patient aged 55.

edge, which I packed tight with a strip of folded iodoform gauze one-eighth inch wide. The ulterior healing would result in an appearance of the gum very much as if it had never been diseased, and with no signs of an operation noticeable; the gingival papillæ would be practically restored.

This operation, however, was purposeless in advanced suppurative cases in which the involvement of the soft and alveolar tissue was extensive, and recognizing the cause of the failure to be the lack of proper approach to all the involved area, I devised the following operation.:

#### TECHNIC OF OPERATION

The patient is prepared as for all oral surgical operations, performed under procain-epinephrin conductive anesthesia. The part to be operated on (*Fig. 1*) is swabbed with tincture of iodine, and a flap is lifted by making two parallel incisions, starting at the cervical free border of the

gum, and carrying them apically to the apical region each side of the area over the tooth or teeth involved. The incisions are made so as to penetrate the mucosa and submucosa, and to include the periosteum. This, with the gum tissue overlying it, is lifted with the raspator, retracted, and held in position by the assistant (*Fig. 2*). Thus the diseased part is well exposed, and with suitable curets and knives, all the inflamed, infected, granulomatous tissue found, between and surrounding the roots of the teeth, is removed.

Next, with delicate chisels and mallet, the alveolar plate is chiseled away from around the denuded portions of the roots, so as to insure the removal of any and all infected bone covering the roots, which are then well curetted. The rough edges of the remaining alveolar bone covering the roots are well smoothed so as to form an even surface with them (*Fig. 3*).



Fig. 8.—Same patient as is shown in Figure 7, four months after operation.

The flap is then released, and its inner aspect is inspected for possible adhering inflammatory and granulomatous tissue, which is thoroughly curetted away, disturbance of the remaining healthy periosteum being carefully avoided. The parts are washed with physiologic sodium chlorid solution, swabbed with a 50 per cent. solution of the official tincture of iodine, the wound surfaces are freshened up, and the flap is replaced in position and sutured (*Fig. 4*).

The sutures are taken at each end of the incision, one near the cervical end and the other near the apical end. When the operation is performed over an area covering more than four teeth, it is well to take one or two additional sutures between the teeth, securing the approximation, for instance, of a labial flap to the palatal gingiva. The parts of the free edge of the sutured flap that appear to be necrotic from lack of nutrition, because of the long existing interposed infection, are cut away with sharp scissors, leaving a clean cut which, when healed, presents a well



adhering surface, surrounding the root of the tooth. Before the patient is dismissed, the parts are again swabbed with tincture of iodine and covered with a strip of iodoform gauze, which is changed once or twice at intervals of twenty-four hours. The sutures are removed on the fourth or fifth day, and unless the operation was attempted in an extensively necrotic case, in which removal of the tooth or teeth should have been practiced, there will in time be new bone formation around the roots, complete reattachment of the soft tissues, and quite loose teeth will become firm and stay firm (*Figs. 5, 6, 7 and 8*).

#### COMMENT

It is needless for me to say that it is advisable that the mouth be placed in as hygienic a condition as possible before the operation, all exgingival irritants, such as salivary calculi or ill-fitting fillings, inlays, crowns, etc., being removed from the area to be operated on, and preferably from the entire mouth. In cases in which, for some reason or other, this was not done prior to operation, the patient must be warned

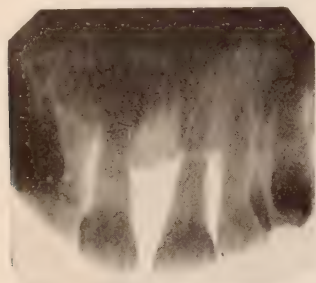


Fig. 9.—Amount of alveolar resorption over upper anterior region in patient on whom operation was performed, shown in Figure 5.

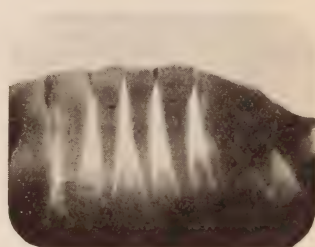


Fig. 10.—Amount of alveolar resorption over lower anterior region in patient on whom operation was performed, shown in Figure 7.

that it ought to be done as soon as the parts have sufficiently recuperated to permit handling them, and the rest of the mouth, for such purposes. This is usually from ten to twelve days after the operation. The patient may then resume the rational care of teeth and gums with toothbrush and tooth powder, etc., on the operated area. In the rest of the mouth this need not be interrupted at all, except in rare cases, for one day after the operation.

There is usually no discomfort following the operation. At times there is some swelling and pain, after the effect of the procain wears off. The application of an icebag fifteen minutes to the hour, for two or three hours, usually brings prompt relief from pain and reduces the swelling.

All areas of the mouth, without exception, can be operated on as described above. I have extended the operation over as many as six adjoining teeth; but it is advisable when there is a great deal of suppuration in the entire region not to operate at one time over more than three

or four teeth, in order to avoid opening up too large an area for septic absorption.

Whenever there are devitalized teeth in the area to be operated on, these must first be thoroughly treated; root canals must be thoroughly, aseptically filled. Apicoectomies may be performed at the same time as the operation for the suppurative periodontal condition. In multi-rooted teeth this is not always practicable and, therefore, such nonvital teeth, with periapical and periodontal pathologic conditions, would better be removed.

As in all other oral surgical operations, the roentgenogram (*Figs. 9, 10*) is an indispensable adjunct in diagnosis. It is my experience that when the roentgenogram shows that one side of the root is still supported by investment tissue, the case is a good operative risk. Even in cases in which apparently, from the roentgenogram, the investment tissue is lost almost to around the apical region, the tooth, however, responding to the ethyl chlorid thermal test, the operation was successfully performed in a small number of cases attempted for purposes of experimentation.

#### ADVANTAGES OF THE METHOD

Full exposure of the entire affected area is obtained, and hence facility for a thorough operation. Once the operation has been correctly performed and the patient dismissed after a few days of observation, the parts formerly harboring infection are totally obliterated, and the patient is able with only reasonable care for cleanliness of the mouth to enjoy health in the parts formerly diseased. Some cases that would be pronounced incurable by the ordinary methods now in vogue for treating so-called pyorrhea alveolaris might be successfully treated by this surgical method.

8 West Fortieth St.

#### DISCUSSION

DR. ARTHUR D. BLACK, Chicago: I approve of almost all Dr. Zentler presented, yet I cannot see the advantage of bringing back a flap and making a complicated operation instead of simply cutting away the overlying tissue. Scraping the surface of the root and bringing the soft tissue over it is just what we should not do. If the cementum is dead no soft tissue should be left overlying it. It is very easy to remove all of the detached tissue if the pockets are on the labial, buccal or lingual surfaces of roots, but when the pockets are between the teeth, it is necessary to cut away not only the tissue which is detached from the root, but also some of the soft tissue and the bone on the buccal and lingual sides of the interproximal space, in order to promote cleanliness. In most cases it is necessary to cut away a little of the edge of the bone, because the detachment from the root surface is usually deeper than the crest of the bone over the particular area. No matter what form of treatment has been employed, many operators have been deceived by the fact that the tooth, which may have been quite loose, has become much less so, and they have thought there has been a reattachment of the periodontal membrane. The amount of destruction of the periodontal membrane and the looseness of the tooth are not necessarily definitely related one to the other. Inflammations involving the periodontal tissues cause the fibers to lose tone so they do not hold the tooth tightly in



its socket. Following almost any treatment by which the inflammation is reduced, the teeth have less motion within a few days. This does not mean regeneration of tissue, but only that the fibers have regained their tone.

Dr. Moorehead might tell you of the experiments on dogs in which he and Dr. Noyes attempted to cut the peridental membrane away from the cementum. In each case they found, on microscopic examination, that the cementum had not been stripped; that a considerable amount of the soft tissue remained attached to the cementum. When cut in this way the peridental membrane will heal quite as readily as any other soft tissue.

DR. GEORGE EDWARD FELL, Chicago: I have looked on this as a case of infection which must be overcome and in which the mouth has to be placed in such condition that reinfection cannot take place. It is evident that most of our cases of gingivitis can be cured if proper methods are employed and carried out radically.

DR. THOMAS L. GILMER, Chicago: Dr. Zentler has indicated that bone is built up on the sides of the roots of these teeth. I would like to have him state rather definitely, if he will, what is the nature of the union between root and tooth. Is it vital, or if non-vital, is it a union similar to that found in implanted teeth; that is, an absorption of the cementum and a building in of the alveolar process?

DR. TRUMAN W. BROPHY, Chicago: When a part is in an abnormal state, put it to rest. So that the very best thing to do in the treatment of a tooth that is inflamed, as described in this case, would be to put the parts to rest. Band the teeth and fix them so they will not be moving about after the operation is done. In the second place, the tooth root that has been deprived of its pericementum by this suppurative process should be opened and the diseased tissue, together with the end of the root, removed. A few days ago a dentist came with his patient, for whom he removed a first lower molar some weeks before. The patient was still in a great deal of pain and distress. He had removed the tooth, the roots of which had two great abscesses. The tooth came away, but the abscesses remained. After curetting the alveoli and removing the diseased tissue the man was very comfortable in a few days.

Precisely the same condition is present in these cases where it becomes necessary to penetrate the alveolar process and remove diseased tissue together with the end of the root. The surgeon would not be regarded as a very wise man or a very conservative practitioner if he would amputate a leg because his patient had an osteomyelitis. The position is exactly the same regarding the teeth. What the doctor showed us here in the excision of diseased teeth and removal of diseased teeth is correct, and by and by there will be sufficient enlightenment on this question so that so many teeth will not be extracted unwisely.

In regard to the entrance of germs after cutting off the root of the tooth and subsequent treatment, you do not try to sew up the socket or gum tissue after you extract teeth. You allow granulation tissue to fill the alveoli, and after a while you have a well-developed alveolar process. The same is true after excising diseased tissue and the end of the root. The cavity should be left precisely as a tooth socket is left following extraction of a tooth. We all know how these sockets have filled in, leaving a good, round, smooth surface. To amputate the apex of a tooth root is right, but to make a flap and close the cavity by stitches, leaving a place where another abscess may form, should not be done. I would make a funnel-shaped opening, remove the diseased root and diseased tissue, getting it free and clean, and then keep it open until granulations fill the cavity and until the healing is complete. In that way you will not have recurrence of the disease.

DR. FREDERICK B. MOOREHEAD, Chicago: The fundamental underlying question in the type of infection suggested by Dr. Zentler is with the hard tissue and not with the soft tissue. The seat of pathology in these cases is in the hard tissue. The most important question in this whole matter is that of a normal circulation. Where you find a proliferating endarteritis associated with a chronic heart or kidney no amount of local

treatment will avail. These infections will not clean up in the absence of a healthy circulation, which, of course, cannot be had unless the blood vessels are normal. Any method, therefore, that has for its object the saving of teeth under these special conditions must be contingent on the general condition of the patient. One may undertake to save teeth when the general conditions are good, while he would remove similar teeth where general conditions were poor. The condition of the circulation and the general reparative power of the patient are paramount factors in guiding us between our efforts to save teeth and their immediate removal. The tooth has no analogue and one cannot, therefore, make a comparison between a tooth and other bony structures of the body. One-half of a tooth root may be vital because of its investment in peridental membrane, while the other half may be a foreign body. The portion of the tooth root which has been deprived of its peridental membrane through infection will act as a foreign body and not be sequestered. This is not true of any other bone infection in the body. For example, one-half of a long bone may be devitalized through infection and be thrown off as a sequestrum. There can be no organic union between a tooth root which has lost its peridental membrane and the surrounding bone or soft tissue. It would seem, therefore, that these elemental fundamental facts must be our guide in undertaking the management of infected teeth.

DR. E. S. FULLER, Dayton, Ohio: Some years ago, in order to obtain better access for cleaning the root surface of a lower incisor, I made an incision along the axial line of the tooth, cleaned the surface and sutured the gum flaps together. The sutures pulled out and the root surface became exposed. This I thought unfortunate at the time, but now I think it was the best thing which could have happened. During the past three years I have been treating these "pyorrhea pockets" by removing the overlying gum tissue in all cases, excepting those where the pockets were shallow enough to become obliterated by the reduction of the gingival inflammation following the removal of deposits and the cleaning of the root surface. Many cases are seen showing a deep "pyorrhea pocket" on both the mesial and distal proximal surfaces of a tooth—say a bicuspid, for example—the adjoining teeth not being affected. In these cases I frequently extract the diseased tooth rather than resect away the gum tissue from the interproximal space, as a horizontal resection would destroy the attachment of the tooth not involved.

DR. ARTHUR ZENTLER, New York: To understand the character of the union obtained we would have to secure a section embracing all the tissues concerned and submit the whole for histologic examination. It is not easy to obtain human subjects for this. Animal experimentation may be used for the purpose. I believe, however, that we do not have the same conditions in animal as in human mouths. Practical examination shows a union, in operated cases, difficult to penetrate with fine probes. Only by exposing the entire involved area can one eradicate the disease. Simply cutting away the pocket has not proved permanent.

Where I operate at the same time for peridental and periapical infection, I make the incisions as described in my operation. A month after removing the sutures there is no sign left of these incisions, while with the semicircular incisions for apicoectomies cicatrices are present for a long time. One need not fear to suture the flap in either of these operations, provided the operation is done as aseptically as it should be done. I never had an ulterior infection due to suturing. I thought it understood that only healthy tissue is allowed to remain, and in speaking of reattachment I did not mean a reattachment of pericementum, but a reattachment of soft tissues that had been lifted and then replaced carefully, saving the healthy periosteum. Twice I operated in cases previously splinted. The operations were failures. It was due, I believe, to the lack of normal motion. It interferes with circulation and deprives the part of proper nutrition.

It is true that the fundamental pathology is with the hard tissues and not with the soft, and that is precisely why I felt the necessity of lifting a flap and of getting to the hard tissues underneath. That is why I chisel away a strip of the involved alveolar plate as well as curetting the soft involved tissue which lies over it and surrounds the



roots. That is why I pronounced it a poor operative risk to operate when all investing tissue is gone, and advise in such cases removal of teeth.

As to the general condition of the patient, I think it is understood that if it cannot be controlled one need not attempt local treatment expecting success. Both must go hand in hand. The local circulation will be improved by the operation if we remove the infected parts. The general circulation must be taken care of by the patient's physician.

DR. BROPHY: Is there not some vitality left in the cementum?

DR. ZENTLER: Wherever there is cementum left on a portion of the root that had prior to operating a detachment of the investing tissue, it is an open question in my mind whether this cementum is not able to throw off further cells into newly created healthy surroundings to form some sort of attachment. Where suppuration has intervened I do not believe there will be any live cementum. We get a reattachment of healthy tissue to healthy tissue in approximating them. You need not fear at all to remove some of the healthy tissue if you must do it in order to eradicate all the diseased tissue. The lost healthy tissue will be replaced the same as in any other surgical procedure.

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## TECHNIC OF ROOT PREPARATION AND PORCELAIN JACKET CROWN CONSTRUCTION\*

BY GEORGE A. THOMPSON, D.D.S., CHICAGO, ILLINOIS

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WHEN THE PREPARATION of a tooth for a porcelain jacket crown is brought up for discussion the individual who never has had experience in this kind of work always asks, "Don't you find it difficult to control the severe pain?" or "Do you use conductive anesthesia?" Why this should be the first thought in the minds of many men has puzzled me considerably. Can it be that this type of work is totally misunderstood? Does anyone suppose that we try to do the work of the orthodontist and correct irregularities by this method? At least it is not so in my practice. The type of cases where I use this crown is where a crown of some type must be employed. Cases where some men use large mesio-disto-incisal gold inlays; cases of bad abrasion where the bite is to be opened; cases that result from accidents. The average case has had large gold foil fillings or porcelain inlays which have failed, or by accident or wear the angles are broken away.

I have made and set hundreds of these crowns in all manner of cases—for all types of patients and I never had a case where I failed to make the preparation and no one has ever complained of being subjected to an unusual degree of pain. I never have used analgesia in this work or any form of anesthesia. I am of the opinion that they never are needed, if not absolutely contraindicated. For the reason that the tooth might be overheated and result in a hyperemia and inflammation which would lead to a pathological condition; and what is more to the point, is it logical to use conductive anesthesia or something similar, then turn a novice loose to do the delicate cutting necessary to properly

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\*Read before the Northern Ohio Dental Society, 1918.

prepare a tooth and the patient not able to respond? Those who have teaching experience know what would happen in the colleges if the cavities were prepared under similar conditions. My point is that the average practitioner is in just as much danger as a student until he has mastered the preparation and has sufficient confidence in himself to execute it. If a man gets a start in the wrong line and has two or three failures he probably will lose confidence in himself and the work, and never will take it up again.

The first consideration is a radiograph; even if the tooth is vital this is necessary if we are to regard the whole mouth as a unit. The particular tooth we wish to crown might be all right, but one of the teeth on either side may be extracted for some reason, and our tooth with the jacket crown would then present another problem which might be embarrassing.

The removal of enamel from a vital tooth as we tried to do it years ago was the most painful and difficult operation in dentistry. The removal of enamel can be accomplished on any of the anterior teeth in ten minutes, if the technic is followed carefully. The ease with which it can be removed with little discomfort to the patient and without any anesthetic is almost a joke. The old idea that the stone should be kept cool is decidedly wrong. A device for applying a constant stream of hot water under pressure directed upon the tooth during the operation is all that is needed. The stream of water is constantly drawn away from the mouth with the saliva ejector.

With a half-inch stone, cut about two mm. from the incisal. Use a one-half-inch knife edge Jim Dandy carborundum stone in a small mandrel, making a line cut from the incisal to the gingival, about one mm. from the mesial and distal on the labial and lingual. This cut is made in the enamel to the dentin, but not into the dentin. Then with an enamel hatchet as a lever, break out the enamel. This will denude the proximal surfaces. Make another cut about one mm. in from the enamel margins as before and break away. Carry this procedure across the labial and lingual. Then with the end-cutting bur or plain fissure, square up the enamel that remains around the tooth and with enamel cleavers it will fracture easily. I have a special set of enamel hatchets, fifty-four in number, designed to reach any angle without laceration, but sufficiently strong to remove the enamel with ease. The trouble with most enamel cleavers on the market is that they are too large to use properly, without an injury to the gums, but many of the pyorrhea instruments make excellent enamel cleavers.

The enamel rod direction at the gingival under the free margin of the gums compels us to remove it entirely, if we are to have a perfect shoulder. Were we replacing it properly or not was a question. You easily can see that the thickness we remove and the amount we replace would have a bearing upon the tension given the soft tissues. I took a



set of teeth and cut the crown off one mm. from the gingival line, measured each surface and cut off one-half mm. more. I found that the enamel varied in thickness upon each surface and this variation was constant. It would be impossible to reproduce this variation in thickness in a single banded crown, even if the men knew what the different thickness of enamel on each surface was.

The Blue Island Specialty Company make a seamless copper band which must be ordered in extra length (about one-half inch). It is furnished in twenty-four sizes. Select one which will accurately fit the root at the gingival and is carefully trimmed to the curvature of the gum tissue. This always is done before the shoulder is cut.

The shoulder is cut with a plain fissure bur, No. 57 S. S. W., starting at the labio-gingival angle and cutting across the labial. Then start at the center of the lingual, cut to the mesial and through the proximal joining the labial shoulder. Start again on the lingual, cut to the distal through the proximal and join the labial again. The finished shoulder should be about one-half mm. wide, well under the free margin of the gums. A further refinement of the shoulder is made with a special set of instruments, cutting it so that it will incline inward and upward slightly toward the apex. This is an important detail.

Toilet of preparation is made with stones and paper discs. Carefully study the stress of mastication and shape the incisal surface so that you will have a plane at right angles with this force. Then with a fine sandpaper disc, well coated with vaseline, polish the surface of the preparation.

The preparation that I use presents no sharp angles except in the occlusal formation at the points that correspond to the occlusal grooves. I believe we thus have a stronger porcelain restoration than if we cut planes at right angles to normal stress of mastication at the junction of the occlusal and proximal surfaces, which can become cleavage points under certain conditions.

A careful study of the illustrations will bring out the requirements of a proper preparation. On the bicuspid and molars the cusp formation is carried out to overcome the various applications of forces in mastication, and thus transfer the strain from the thin proximal surfaces of the porcelain to the preparation made in the occlusal surface at right angles to the applied force.

The selection of the shade should be made at this time, so that the porcelain shade-guide tooth can be placed in better relation to the approximating teeth. Wet the teeth and guide-tooth while selecting the shade. A chart can be made to note accurately any little peculiarities or defects which you wish to reproduce, by drawing outline of the labial surface, dividing it into mesial, distal and middle thirds—incisal, gingival and center thirds. Any third may be further subdivided and the location of a given area recorded.

The impression of the root is secured by the use of the copper band which was fitted before the shoulder was cut, used as an impression cup. Fill with Kerr's modelling compound; dry heat over Bunsen and vase-line slightly, holding the finger over one end, press into position that will be apically of the shoulder; chill with cold water and remove. Into the impression is packed copper amalgam, building a root on the preparation for convenience in handling. Some men use cement, but I prefer a metal. I have devised a split ring in which I can cast a root by taking impression in cement to which talcum powder is added to destroy its adhesiveness.

Before dismissing patient the root is covered with a temporary crown, made of white base-plate gutta percha. If the tooth is vital cement it in position. It serves to protect the tooth from thermal changes and holds the soft tissues in their proper position.

The bite can be taken with a hard paraffin wax, like S. S. W. "Tenex," or Kerr's compound. Bite with plaster impression is sometimes used.

To secure model, the reproduction of root preparation is polished with discs, having it smooth and conical toward the apex and placed in proper relation to the impression. Run up on the articulator. A hole is cut in the plaster model so that the root can be removed without destruction of any of the vital parts of the model. The shape given the root never should be round, as it is liable to rotate.

The matrix is formed by cutting a piece of .001 platinum foil about one mm. longer than circumference of root at the gingival; it may converge toward the incisal and should be about three mm. longer than the distance from the shoulder to the incisal. The metal root is removed from the model and the platinum is laid against the labial surface. It is roughly conformed here with the fingers, then burnished to the shoulder with burnishers. Holding the platinum firmly to the root with the second finger and thumb, a triangular piece is cut from the mesial and distal incisal angles; this permits the central portion to be burnished over the incisal and down onto the lingual about one mm.

The burnishing continued around the mesial and distal surfaces conforms the platinum to the shoulder as well as to the surfaces. This will bring the ends well around the lingual. With a pair of pliers the ends are grasped and brought together, the excess projecting at right angles from the surface. Trim away all but one mm., then trim the left excess to one-half mm. with cotton pliers; fold the one mm. over the shorter projection and burnish down to the root. Remove, trim all but about one mm. beyond the shoulder toward apex. Reburnish the entire matrix accurately and you will have a matrix which will be a positive fit and will stand all the handling necessary.

On the shoulder we have four thicknesses of platinum, which is reduced to one by grinding with a fine stone. Otherwise, when the crown is finished and the platinum removed we would have a poor fit



at that point. Test matrix to see if it can be removed easily before placing on any porcelain.

#### COLOR: THE CHIEF OBSTACLE AND ITS SOLUTION

Unless I can show you how to broaden your sense of color selection, color reproduction will be of little value.

Color and not tooth anatomy is the barrier between the beginner in porcelain work and success. Most dentists have had instruction in dental anatomy, but few understand even the theory of color. Color is a science, to master which one must give time to study and to laboratory experiments. Without a clear understanding of its principles, no one should hope to mix haphazardly and reproduce colors accurately.

This subject is a matter of more difficult acquirement when compared with form, which can be measured; its anatomical structure may be investigated.

The system of color depends upon physical measurements made by special color apparatus. Much confusion of color is caused by the inability of most people to express themselves in more than two dimensions; an appreciation of this can be had when, in the study of color nomenclature, we find a classification of names for more than four hundred greys. Unless we study this subject carefully all our sensations are included in the color solid and none by its scale of hue value and chroma.

Something is radically wrong when we find that men long in practice use from one of three shades in every case. So many have expressed themselves to me that shade so-and-so blends nicely in nearly every mouth. I do not think that all of these are color-blind, as the law of averages would not permit of their number. The future will see color standardized. It will be taught in all schools, and we will have definite symbols to express ourselves. Colleges of color will be established where those who wish to specialize in the art and crafts will secure the proper training.

In the fine arts, the textile manufacturers, even the printers are giving considerable attention to this matter. It is the only means by which the knowledge of color will live.

In the past we find, in the study of art, that entire schools and ages excelled in color, while in other schools and ages, it is almost entirely lacking.

Education in this line begins when we recognize the names of certain hues, as red, yellow, green, blue and purple. Red is the color most individuals easily recognize, even savages recognize it and have a name for it. Distinction of color is slow at first. The most notable contrasts are recognized but the more delicate colors are lost. But after a time spent in exercise and experimental work the delicate colors will be appreciated more easily. The more time one spends in this work the more

interest he will take in it and will apply his knowledge in many different ways. When this subject is mastered every color can be recognized, named, matched and imitated.

The first step is to study the theory of color and master its principles. Then mix porcelain as supplied by the manufacturers in various proportions with a pure white, carefully record and keep the buttons; follow this up with the various colors mixed in the same way. Next, study the physical nature of light—how it travels, the absorption, refraction and reflection of light on different surfaces. Take a central incisor root preparation on a model, wrap three platinum matrices for the same root; bake a gingival color of, say shade five, carefully measure the porcelain mesio-distally, labio-gingivally and inciso-gingivally, have the measurements the same on all three; then add, say shade fourteen as the incisal color, measure as before and have all three identical. After they are baked they would match accurately as all three were made over the same root preparation on the same model. All three were baked together, each color was carefully measured as applied; they will be as near alike as it will be possible to make them. Take one and disc it as smooth as you can with paper discs; mark one of the others with fine stones and a diamond-point, have the surface markings running mesio-distally; the third one mark in the same way but have the markings run inciso-gingivally. Wash with spray bottle and compressed air, place all three in the furnace and glaze. The result will be three different shades due to the action of light on the surfaces. The crown with the smooth surface will be much lighter due to the fact that it will reflect a solid beam of unbroken light. The prophylactic specialist who carefully polishes the enamel surfaces of the teeth takes advantage of this fact unconsciously. The patient believes the change is due to the removal of deposits and other material, but the fact is the change is due to the changing of a roughened surface to a highly polished smooth surface.

We cannot match a tooth accurately unless the surface of the tooth we replace acts upon the light similar to its mate in the mouth. We may have the correct colors to reproduce, but unless the surface is broken or smooth, as nature demands, our match is imperfect. If you do not believe this, try this experiment: Take one of your patients with two centrals that are perfect, the color is identical. Highly polish one with fine discs, silex, rouge and tin-oxid, then see what you have. The polished tooth is much lighter because the smooth polished surface throws back a solid, unbroken beam of light and the other surface has the imbrication lines of Pickerell or slight roughness which breaks up the rays of light. Another illustration of this is seen in the automobile lights. Most states and all large cities have laws or ordinances to dim the lights. The problem was solved by breaking up the surface of the glass in the headlight.



When I started to experiment with orange porcelain I had a special orange and pure white or colorless porcelain made. I carefully weighed and mixed the porcelain in an agate mortar and pestle, baking samples of each mix. The first mix was .02 white, .98 orange, and the second



Fig. 1

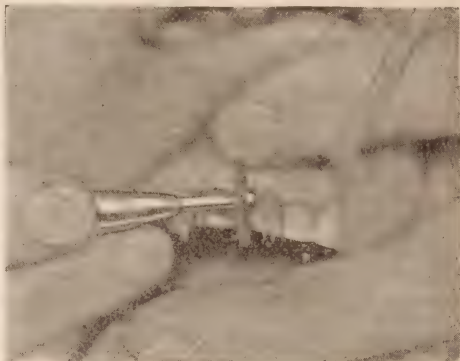


Fig. 2

Fig. 1.—Two central incisors. Mechanical abrasion with loss of contact has caused injuries to the proximal tissue. The following illustrations will show the steps of preparation and the finished crowns in this case.

Fig. 2.—After polishing the roots of the teeth. The first cut is made with a half-inch knife edge carborundum stone. This cut is made about one mm. from the mesial and extends to the dentin, but not into the dentin.

.04 white, .96 orange, etc., until I had fifty specimens. By using one of these for a gingival color I can match accurately any gingival color. I firmly believe that the color spoken of in dentistry as yellow in describing artificial teeth is not yellow at all, but orange. The results I have had will bear this out; other men in this same line of work are of the same opinion.

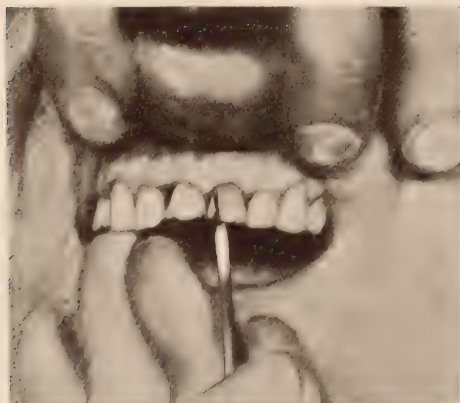


Fig. 3

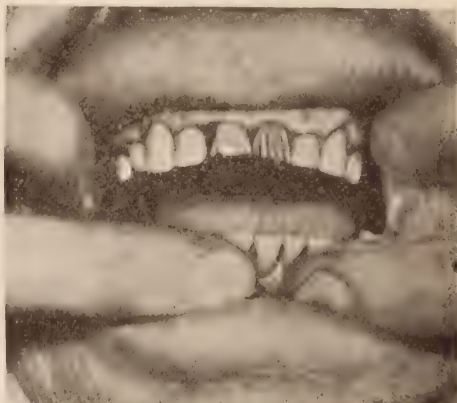


Fig. 4

Fig. 3.—Use an enamel hatchet to break out the enamel.

Fig. 4.—To show the grooves on the labial of central. Cut but one at a time is best and fracture that out before cutting another.

Expert porcelain workers can take six or seven colors and by various mixing reproduce quite accurately. But the beginner will find himself lost in the forest of doubt if he attempts it. We might say, take so much of Nos. 1, 2, etc., by weight and mix—but this would necessitate the use of a balance scale to accurately weigh out and an agate mortar and pestle to thoroughly incorporate it. Then the danger of mixing in particles of dust and other impurities, which cause the bulk of trouble for the inexperienced. Few men would take the trouble of carrying out the proper precautions; a guess as to the weights with incomplete incorporation would give the results we too frequently see.

The Justi high-fusing porcelain is the first step to set a standard of colors for the porcelain worker.

The colors are accurate and are to be used without mixing. The chart furnished gives accurate directions as to what color and where to use it.

#### TO ILLUSTRATE THE USE OF THE SHADE CHART

Shade No. 13, according to the shade guide matches the case. Reference to the guide chart shows No. 4 is the body and is placed on the platinum matrix in the position that would correspond to the dentin in the normal teeth—except in the gingival third where the full enamel contour is made. The balance is then built to full tooth contour with No. 13 and the result will be perfect reproduction of shade No. 13. The gingival third will have the full body color; the incisal third the full enamel color and the middle third a perfect blend due to the thinning out of the enamel color as it is worked to the gingival.

#### TO ILLUSTRATE VARIATIONS FROM THE CHART

Numbers 4, 5, 3, 21 and 23 are the body colors to reproduce any shade on the guide. If, in selecting your shade, say No. 13 is good but is a trifle light at the gingival, the next darker body or No. 5 could be used. In combination with No. 13 enamel it would result in a shade No. 13 slightly darker at the gingival.

The enamel for shade No. 7 is a pure white and could be mixed in any combination to dilute a color.

The first consideration is the material we work with. It is composed of Feldspar, Kaolin and Silex. The two latter will not change at a very high heat; feldspar will liquify at the heat we subject them to in combination and bind the three together in the form of dental porcelain. To these three substances is added various fluxes which control the fusing point. The larger the percentage of the flux the lower the fusing point.

The color is regulated by the addition of precipitated gold, platinum, oxides of gold, titanium, cobalt, iron, etc.

We are interested in the chemistry of porcelain only in a general way. Exact formulæ could be given but they would be of little value, because



the variation of silex for instance is so great in various parts of the United States that uniform results could not be secured by what to the inexperienced would be the same formula. I said that feldspar, when heated to the degree we subject our prepared porcelain to, undergoes liquefaction—it does—but some grades of it cannot be liquefied by the highest heat we can secure with our furnaces. When we understand

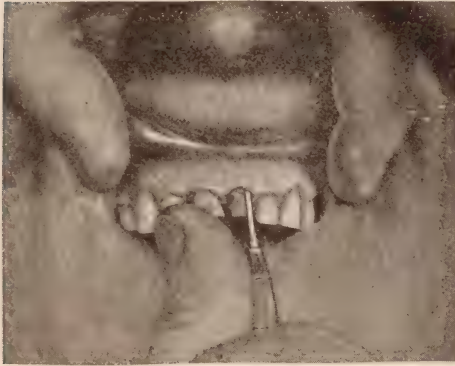


Fig. 5

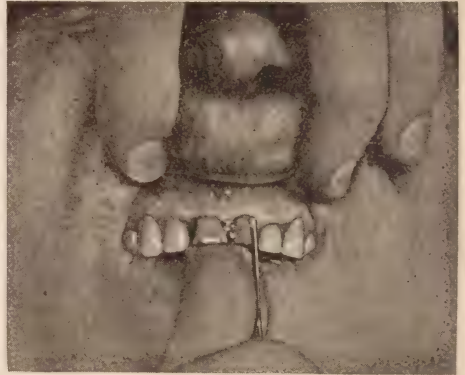


Fig. 6

Fig. 5.—End cutting bur to cut away short enamel rods.

Fig. 6.—Attention is called to the small enamel cleavers which pass under the free margin of the gums without injury to those tissues.

and appreciate these facts, the solution is to use the manufactured powders which will best suit our individual purposes.

Decomposition by air and dust depends upon the content of alkali—the higher the percentage the greater the decomposition. Dust which would settle on the surface would become the center of disintegration;

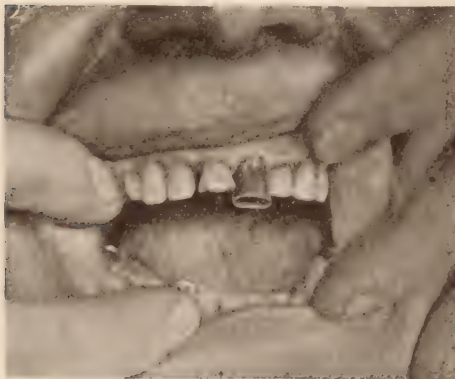


Fig. 7



Fig. 8

Fig. 7.—Seamless copper tube which is cut to the curvature of the gingival tissues. Before any attempt to cut the shoulder.

Fig. 8.—One-half-inch carborundum stone to cut away about one and one-half mm. from the incisal. This can be made the first cut or can be done after the removal of enamel.

if the alkali percentage was low this would occur in spots and could only be seen with a microscope; if the percentage was large the disintegration could be seen with the naked eye and would appear as large spots which has a tendency to cover the entire surface. The old porcelain workers who used low fusing porcelain will recall the difficulties they had when the enamel was placed on the surface before glazing—the numerous bubbles that would occur.

This was caused in a great measure by fine particles of dust that would settle on the surface or had been incorporated in the porcelain powders. Keep your porcelain powders covered and all unfinished work under what is known to jewelers as a movement cover on a clean napkin. Keep the muffles free from dust.

Porous porcelain also is caused by baking too fast—various gases occur in porcelain during the process of baking which form minute bubbles. To overcome this I prefer to place my material in a cold furnace and evaporate these gases slowly. The same trouble occurs in another way; low fusing porcelain can be made from high fusing by grinding and re-fusing.

If we grind or disc a tooth, crown or inlay, the small particles we grind away is of a lower fusing character and must be cleaned away carefully before the article to be fused is again placed in the furnace.

The shrinkage of the porcelain at the gingival can be overcome in three ways: By painting shellac over the platinum on the shoulder; by using a thin film of inlay wax in the same position, either of which will burn out clean, leaving a space which will permit the platinum to be re-burnished to the shoulder, before filling in with porcelain on the second bake; the other method is to cut it away with the packing instrument before the first bake.

The model is painted with amyl-acetate to prevent the plaster from absorbing the moisture from the porcelain. The first color, the gingival, is put on with the root in the hand, packing the porcelain to the greatest density, building up slightly beyond the incisal. The porcelain can be best worked by not having it so moist that it will run. Place the root in the model and lay on the incisal color, bringing the porcelain out to full tooth contour and occlusion; remove and add what is needed to the contacts. Carefully brush off loose particles from the carving and exposed platinum.

Another method of placing the porcelain is to wrap a piece of filter paper around the gingival and pour your gingival color into it; the paper absorbs the moisture and permits the porcelain to be carved; then from another piece of filter paper to the form of the tooth to be reproduced, which encloses the porcelain already carved into it, is poured the incisal color; after the moisture is absorbed carve to occlusion and anatomy. This method is not as accurate; I believe better



results can be obtained by having positive control of your colors and place them where you want them.

Many different materials have been used to mix with the porcelain powders to make them workable. Milk, flour and water, alcohol and even vinegar; all of them will work. For experimental work in making



Fig. 9



Fig. 10

Fig. 9.—Preparation of one central.

Fig. 10.—Shoulder is best cut with No. 57 plain fissure bur. Both centrals prepared.



Fig. 11



Fig. 12

Fig. 11.—Testing the gingival fit with a No. 17 explorer. This is done before the platinum is removed. Any over-hang is removed and a glaze is given to the crowns.

Fig. 12.—Before cementation the platinum is removed. The interior is etched with a fine stone. Carefully wash and dry. After cementing, the surplus is removed with instruments, then with a very fine strip minute particles are removed.

test buttons use a saturate solution of starch and gum tragacanth, which is made by the addition of two ounces of tragacanth to two quarts of water; let it stand twenty-four hours and then strain. The porcelain is first mixed with the starch solution, then add the gum tragacanth; you should then have a porcelain of the consistency of putty. Pack it in some form of split mould and bake to what is known as a carving biscuit which is about 600 degrees in the furnace. Remove it and mark it with a porcelain pencil (Faber 351); if you make a record of what it contained these buttons will be invaluable to you.

Examine the furnace each time before using; look at the thermocouple connection; if it is poor the registration of heat will not be accurate. If the furnace has been moved or handled, see if the needle that registers on the pyrometer is on the figure 0, if not, set it with the corrector. The S. S. W. Electric Furnace with pyrometer and small muffle is the best for this work. The object to be fused is placed in the furnace with the current off. This is a precaution that might save trouble if the current were on. If the tongs were to touch an exposed wire it might result in burning out the muffle. Throw in the knife switch; have the rheostat lever on button No. 1 when 1500 degrees is registered on the pyrometer; close the furnace door. At 1600 the rheostat lever is advanced two buttons at a time until 2450 degrees, which should be reached in about eight minutes. If the muffle is new the lever would probably be on button seven, but as the muffle becomes older it may be necessary to go as high as button twelve or thirteen. If you are in haste, it is perfectly safe to remove the crown at 2000 degrees, but be careful not to touch it with the furnace tongs. When the crown has cooled sufficiently to handle, place it on the root and reburnish the gingival. Pack the gingival porcelain between that which is already fused and the shoulder. Moisten the model again with amyl-acetate and place crown in the model; if any more porcelain is needed for contour and occlusion it is now added. Place in the furnace and bake to 2490 degrees as before. Remove from furnace and place on the model. Examine carefully contact and occlusion.

The next detail will determine whether you have a good or a poor porcelain crown. You remember the platinum matrix overlapped the shoulder toward the apex about one mm. for strength. The porcelain is baked flush with this platinum and the platinum is .001 larger than the root; therefore, the finished crown will be that much larger than the root in the mouth, unless it is corrected. Take a seven-eighths carborundum disc and cut away the porcelain and platinum around the gingival with the crown on the metal root. Clean the crown carefully by using compressed air and spray bottle; follow this up by a good stiff brush and Dutch Cleanser.

The next step is to test the fit in the mouth. To do this do not remove the platinum. The crown is placed in position and a No. 17



explorer (which is a pull explorer) is passed up under the free margin of the gums beyond the shoulder and drawn incisally, passing around the root; if it catches, the porcelain is trimmed again until it is perfect. Place in the furnace and carry to 2500 degrees. The matrix is removed by putting in water, then with a fine knife turn over a small piece at

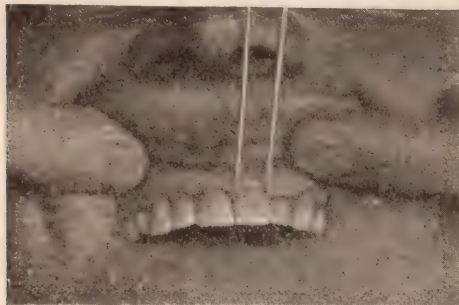


Fig. 13

Fig. 13.—Fine tape on the lingual and angles.



Fig. 14

Fig. 14.—The finished crowns.

the margin, grasp with "K" tweezers and it usually will peel out in one piece.

Roughen the interior slightly with a fine stone and set with Fleck's cement, holding the crown in position with slight pressure. The bulk of the cement is removed with a straight explorer. The fine particles of cement are removed by a very fine strip, passing it through the mesial around the lingual and back again through the distal. Reverse this

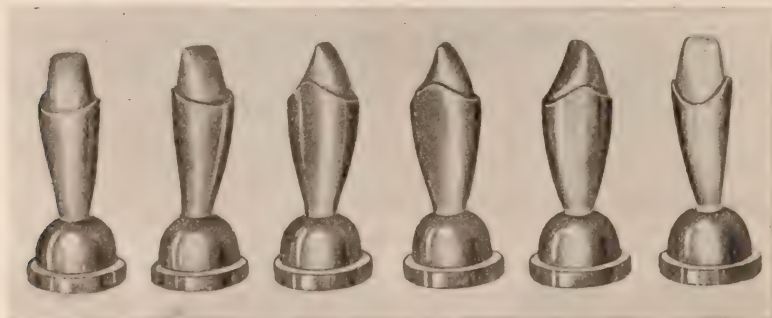


Fig. 15.—Study of preparations.

and the take has entirely circled and polished the junction of crown and root.

Before using the strip, the saw-edges should be removed by drawing it over a fine stone. If this precaution is observed, the soft tissues never will be injured.

The possibilities of artistic restorations secured by reforming and proper staining of artificial teeth will be a revelation to those who will

master a few fundamental principles. I use the word artistic in its broadest sense—displaying perfection of design or conception with an accurate reproduction of nature in our finished piece of work.

We have accepted from the manufacturers for years teeth totally unfit to use in our restoration. The teeth show no sign of wear or age and every patient who needs services of this character is at a period of life when use has left its mark upon the teeth. In justice to all concerned we must not place all the blame on the manufacturer. As the output of any business is based upon the law of supply and demand, it seems to me a serious reflection on the dental profession, to put it mildly.

We hear a great deal of criticism of the anatomy of artificial teeth which is true, but when we examine the work found in our patients, what do we see? How near is the anatomy carried out on the large inlays, large amalgam fillings? What do the crowns we find resemble? Did you ever see the anatomy of the lingual surface of an incisor properly reproduced? How many men even understand the vital importance of the perfect reproduction of this surface anatomy? The usual form given is convex in all directions, which is wrong. The correct form is concave in all directions with a mesial and distal marginal ridge, which is very important as they prevent food from being forced into the embrasures, which causes the irritation you always find around crowned anterior teeth unless the lingual surface anatomy is perfectly reproduced.

When we construct a crown on any tooth in which the occlusal or incisal surface is exposed to view, we have failed miserably unless we reproduce accurately the correct incisal stain or the discoloration in the occlusal grooves. Our anatomy may be perfect but the crown will stand as a monument to our inartistic ability, and will be recognized as such by the layman unless we reproduce the little defects found in the surrounding teeth.

The first thing to do is to make a collection of natural teeth; get as many as you can in good condition, sort them out and arrange them in groups mounted on wax. Keep them in boxes and when you are working have them before you constantly. The greatest artists that ever lived always worked with models, and we as dentists never should put ourselves in a class above them. I do not care how much you may think you know about the anatomy of teeth if you will work in this way it will surprise you how much more you will learn. I have a collection of thousands of perfect specimens of natural teeth and I use them constantly with profit.

In a previous article I spoke of the roughened surface of the anterior teeth—how the action of light affected the color of the finished crown depending upon the marking you made upon the labial surface. An accurate knowledge of this can be had by a close study of natural teeth.

About ten years ago I started to stain teeth with the Lennox china colors, but as this is a thin surface stain we had to exercise care so as to



not polish it off at the lathe. Some did much better service in the mouth than others, but eventually all were brushed off, or probably dissolved in the saliva. Most of you may not know it, but glass is slightly soluble in water and it may be that the thin colors which I put on went into solution in later years.

I next used the S. S. W. and Ash's mineral stains with better success, but in jacket crown work, when I wanted to stain the occlusal surface,



Fig. 16.—Study of preparations.

the area was always where the porcelain was the thinnest. I doubted whether it was advisable to reduce this more by adding a stain, the strength of which was doubtful. I baked up a crown, using one of the mineral stains, and tested its strength. I never used it again on the occlusal. The thought then occurred to me, why not get porcelain, made the same as the porcelain I was using, but colored to match the

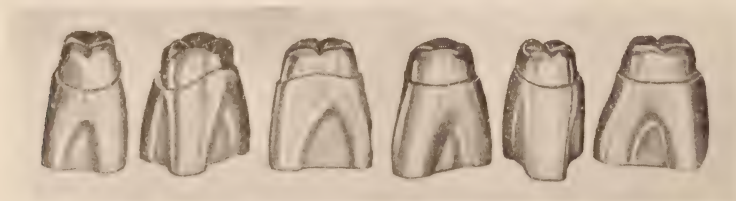


Fig. 17—Study of Preparations

stains? I had them made and started to test them. They proved satisfactory in every way and I use them in most cases.

One set of special stains has a fusing point of 2450 degrees. The fusing point of all the facing and plate teeth manufactured in this country is between 2450 and 2460 degrees, notwithstanding the fact that some manufacturers claim otherwise. The 2450 degree stains are for this class of teeth. The other is 2560 stain and is used for jacket crown

work. These stains never are used without mixing. The various colors are white, gray, blue, pink, yellow, green, brown, black, and orange; definite proportions by weight are mixed thoroughly with a starch solution (saturate solution of corn starch and water), then add the gum tragacanth (two ounces gum tragacanth to two quarts of water; let it stand twenty-four hours and strain); you should have a porcelain of the consistency of putty. Pack it in some form of split mold which is slightly oiled (lard oil), and bake it to what is known as a carving biscuit, which is about 600 degrees in the furnace. Remove it and mark it with a porcelain pencil (Faber 351). The number marked on the button will always remain. Return to the furnace and bring to the fusing point. Make a record of what each button contained and it will be invaluable to you.

With porcelain jacket crowns that demand stains, the area to be stained is cut away before the first bake, and the proper stain as selected from your experimental buttons is placed in on the second bake.

When you wish to reproduce the faint little lines of fracture we so frequently see on the labial surface of the incisors, cut into the porcelain with a cataract knife which is very delicate, bake to 2450 degrees; add your stain before the second bake. White spots can be quite accurately reproduced by baking to full contour on the first bake and then grinding away with a stone the area to be stained white. Replace this with the same color you cut away and it will appear as an uncalcified area of enamel unless you cut too deep.

The roughened labial surface always is done after the staining is finished; use fine stone and a diamond graver, which is a pencil-like instrument made of a black diamond. After you have had some experience in surface reproduction you can make a chart. Examine with a Hastings lens the surface of the surrounding teeth and record the imperfections on the chart. Use a glass and the apparent difficult piece of work will be greatly simplified.

To stain the occlusal surface of a jacket crown after the porcelain is packed and carved to occlusion, cut out the grooves with the cataract knife and bake to 2450 degrees. Add your stain (modified brown), and when the crown is finished it will be the last word in a natural artistic reproduction.

The highest type of plate work and removable bridge work is done with full-contoured teeth. We have three methods to follow. *First:* Detachable post crowns of the different manufacturers. The crowns are ground to occlusion and the forms modified to meet the individual case. Here again let me emphasize the importance of natural teeth as models and the use of a good skull. The groove and marginal ridges on the occlusal surfaces are cut with fine stones and then carved with the diamond graver. Diamond drills are used to drill into the area



around the dentin horns for stains. On the anterior teeth two holes are drilled on the incisal at the mesial and distal which are united with a knife-edge stone. Lines of fracture on the labial are made with the diamond graver. Wash the teeth carefully with stiff brush and gold dust; add your stains and place on a tray filled with white bird sand or coarse silex, and place in the furnace and bake to 2450 degrees.

*Second:* Secure the large molds made by the Consolidated Manufacturing Company. Modify to the requirements of the case and grind to the occlusion. Then order from the Consolidated Company the same set in a biscuit-baked crown. As you have the biscuit-baked tooth and the baked tooth you can get an idea as to the shrinkage. If your lower first molar biscuit-baked measures sixteen mm. and your baked lower first molar measures twelve mm. you are going to have that much shrinkage when you fuse your biscuit tooth. If you take two pieces of steel, shaped so that when they are put together they will be a double-end caliper, then rivet them together so that when they are opened one end will register sixteen mm. and the other end will register twelve mm. you will be able to tell the size of your crown when it is fused. By using the caliper it will be a simple thing to carve the biscuit teeth so they will reproduce the teeth already ground to meet the case. With your cataract knife cut away the areas to be stained, add your 2560 degrees, and glaze. The result will be beautiful.

*Third:* Carve up in plaster one-fifth larger than the tooth needed. Make a split mold of fusible alloy. Use the Justi high fusing porcelain with starch and gum tragacanth, place the porcelain in the mold, the incisal color first, then the gingival, according to the chart. Biscuit bake and modify as to the anatomy and cut away for stains. Drill out the post holes and bake to 2450 degrees. Add your stains and glaze, 2500 degrees.

The following formulæ will be found to be of value for producing stains on the incisal surfaces of the teeth:

*Cork Color:* White, two parts; yellow, one part; orange, one part.

*Orange Brown:* Orange, two parts, with three parts of brown.

*Amber Yellow:* Orange, one-half part; brown, one-half part; black, one part; white added to get desired tint.

*Buff:* White, two parts; yellow, one part.

*Dull Yellow:* White, four parts; yellow, five parts; green, one part.

*Orange Brown in Hue:* Mix in one part of black, one part of white, two of orange.

*Very Dark Brown:* Mix six parts of black with two parts of orange and one part of yellow.

*Amber Brown:* Mix six parts of brown, four parts of yellow, two parts of orange.

*Tan:* Mix one part of brown, three parts of yellow, five parts of white.

*Bronze Brown:* Black, five parts; orange, one part; green one part.

*Straw Yellow:* Mix three parts yellow; one part brown.

#### PORCELAIN INLAY

The cavity preparation cannot be included in detail. Most cavities requiring porcelain inlays are gingival third cavities. Next comes the proximal cavities in the anterior teeth not involving the angle. Third in order are the proximal cavities involving the angle. For this class a gold inlay is first made and set, cutting out the exposed portion and baking a porcelain inlay. The gingival third cavities are prepared with rubber dam and the new Ivory cervical clamp. The impression is taken in modelling compound with Dawsett's set of impression cups made by Ash Sons & Company. The model is made of amalgam packed under pressure. The matrix is formed by fitting the model in a special press which is to be shown on the screen. The platinum is placed between two thin pieces of China silk which are vaselined; pressure is brought upon the foil with a water bag which slightly conforms it; it is removed, annealed and trimmed, placed in position as before, but more pressure is exerted. This will usually conform it. Burnish the matrix and clean all the vaseline from model and matrix. The porcelain used is the same as for the crown, using the same shade chart.

The shrinkage can be overcome in two ways—painting the margin with shellac or cutting a figure X across the porcelain. It is packed in position under great pressure, having a clean piece of rubber dam between the porcelain and rubber swager. The first bake probably will fill two-thirds of the matrix; the second, the area where shrinkage occurred; the third, the entire inlay is built up. The advantage of pressure packing is less shrinkage, more dense porcelain and better margins as well as being a great time saver.

Etch with a fine stone and set with Fleck's Cement.

821 Marshall Field Annex.

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## FRACTURES AND DISLOCATIONS OF THE JAWS\*

BY CHALMERS J. LYONS, D.D.S., ANN ARBOR, MICH.

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ADVANTAGES OF A HEADGEAR IN THE TREATMENT OF  
FRACTURES OF THE JAWS

**I**N MANY TYPES of jaw fractures it is desirable to have a fixed support for the retention of the fragments. A most satisfactory type of headgear is one designed by Dr. Jas. A. Aiguier<sup>1</sup>. (*Fig. 96.*) This is buckled around the forehead and occiput and has two firm bands

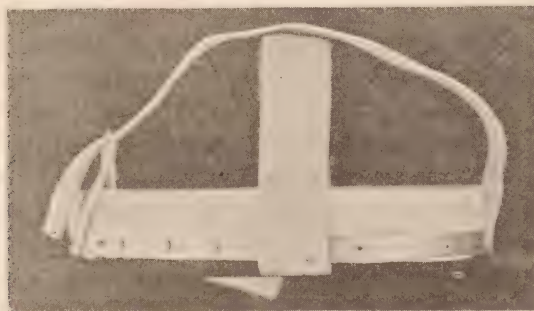


Fig. 96

crossing over the top of the head. It is sometimes desirable to reduce the fracture immediately after the accident, and hold the fragments in normal relation as a temporary procedure until permanent splints may be made and adjusted. This may be accomplished by taking two lower impression trays and cutting the handles off. (*Fig. 97.*) The backs of the trays are placed together and soft soldered. This makes a most excellent bite plate. This is used as first aid. The bite trays are then filled with modelling compound and the patient's jaws are forced into the impression material, producing what is generally termed a "mush bite." The headgear is then placed in position, using a linen bandage around the lower portion of the chin connected to the rings on the headgear. (*Fig. 98.*) Aiguier suggests the use of wide strips of rubber dam instead of linen bandage. The rubber dam will permit of constant pressure being applied at all times and will force the lower jaw up against the splint. This immobilizes the jaws temporarily. It can be used for either the upper or lower jaws, or both. In case the fracture is not

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<sup>1</sup>*Dental Cosmos*, July, 1918.

too extensive, the modelling compound impression may be trimmed up and the appliance may be used in this manner as a permanent splint.

*Fig. 99* shows plaster models of jaws of a patient of the author who had a compound multiple fracture of the mandible. The line of fracture occurred at the angle on both sides of the lower jaw. There was a

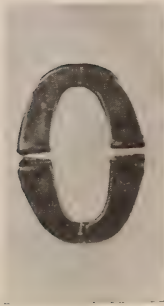


Fig. 97



Fig. 98

transverse fracture on the right side and a comminuted fracture on the left side. As there was only one molar tooth on the upper jaw, a vulcanite rim was made, as outlined on the model of the upper jaw. The



Fig. 99

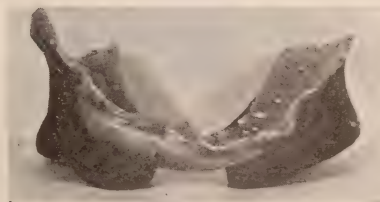


Fig. 100

fracture of the mandible was then reduced and the teeth of the lower jaw were forced into impression wax which previously had been added



to the vulcanite rim, thus producing a "bite." The "bite" was then reproduced in vulcanite and vulcanized to the rim. (*Fig. 100.*) The splint was inserted in the mouth and the teeth of the lower jaw forced into the vulcanite "bite" and held in position by means of a headgear. Complete repair took place in five weeks.

In the application of the headgear for fractures of the superior maxillæ, it can be used very satisfactorily in connection with the Kingsley splint, as in *Fig. 50*, instead of linen bandages.



Fig. 101

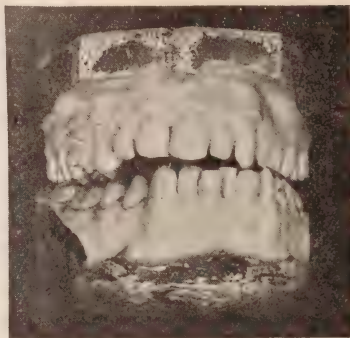


Fig. 102

*Fig. 101* shows a type of headgear used by the French dentists in war dental surgery. The illustration shows it being used in connection with a Kingsley splint.

The headgear may be used satisfactorily as a means of a fixed base for attaching appliances for the support of the soft tissues when extensive laceration has occurred.

#### CORRECTION OF LATERAL DISPLACEMENT

*Fig. 102* shows lateral displacement as result of fracture of mandible.

*Fig. 103* shows a method for compensating for lateral displacements. Wings may be attached to plates of the upper and lower jaws or may be attached to the teeth by means of bands. One of these plates sliding just outside of the other, acting as inclined planes, gradually will bring the lower jaw into normal alignment. These wings may be used as a part of a splint and the lateral displacement may be corrected at the same time repair of the fracture is taking place.

#### LOSS OF SUBSTANCE

In the case of fracture of symphysis of lower jaw with loss of substance, it may be taken care of in two different ways. One manner of treating these cases is in retaining the fragments by a permanent splint in normal position, this splint being put on as soon as possible after the injury, then later resorting to transplantation of bone. The other method is letting the two fragments collapse as in *Fig. 104*. After the

bone-salts begin depositing in from ten days to two weeks following the fracture and the collapse of the fragments, a splint is cast to cover the teeth on both sides of the mandible. This splint is cast out of tin and silver; 80 parts of silver and 20 parts of tin. A jackscrew, 14-gauge, is attached to the anterior portion of the splint and the fragments gradually are forced apart until normal occlusion is obtained. This method of spreading the fragments causes an irritation to the parts which is sufficient to stimulate bone growth so that a section of new bone may be deposited from cuspid to cuspid. The strength of the retention splint may be further enhanced by small screws inserted in the inter-



Fig. 103

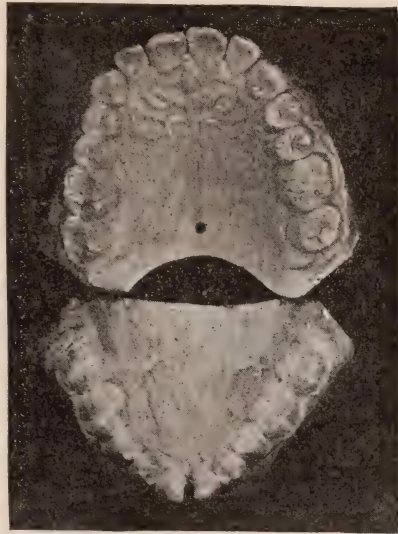


Fig. 104

proximal spaces. The splint at these points is reinforced sufficiently to permit of a screw, 20-gauge in diameter being inserted. The same results may be obtained by using the splint illustrated in *Fig. 81*.

#### FRACTURE POSTERIOR TO MUSCULAR ATTACHMENT

Dr. George L. Villian<sup>2</sup>, of Paris, has designed a very ingenious method for re-establishing and maintaining normal mandibular movements in cases where the fracture occurs posterior to the muscular attachments on the mandible. These fractures always have been very difficult to treat. As an illustration—a fracture involving the head of the condyle or a fracture through the upper third of the ramus. Many of these fractures have occurred on the battle fields of France through gunshot wounds. This ingenious splint is designed not only for the purpose of maintaining normal mandibular movement, but also for the

<sup>2</sup>La Restauration Maxillo-Faciale, October, 1917, *British Dental Journal*, 1917.



purpose of opposing the force which has a tendency to raise up the extremity of the long fragment. This splint also can be used when there is loss of substance of one side of the jaw. The appliance, (*Fig. 105*), consists of a shaft which acts in connection with hinged rods and stop pegs. The shaft in this case acts as a gliding guide directing the fragment of the mandible in sagittal direction, while the hinged rods cause the fragment to describe its normal path in the downward motion. The appliance can produce the normal downward motion while modifying at the time indicated for the individual case the center of rotation. It supplants entirely the action of the pterygoideus muscles in the downward motion and in the same movement it counteracts or opposes itself to the action of the temporal muscle.

In this case the base or point of support of the shaft is similar to that of the condyle (the head of the rod should be placed on the superior



Fig. 105

maxilla, as far distally as possible on the line connecting the condyle with the point of fixation of the lower end of the shaft on the mandible.) The mandible describes the path of a radius very much the same as the path described in the first stage of downward motion in opening the jaws, whereupon the stop peg (*A*) is reached and action (articulation) comes into play at the point of the hinging of the rods at (*B*), causing the mandible to describe a path, the analysis of which is similar to that of the natural downward motion. The upward movement is inversely also normal. The patient can execute the various movements by means of a rod sliding in a tube which permits of lengthening or shortening of the shaft, (*C*). The backward movement is limited by the length of the course of the shaft (the rod striking the end of the tube.) The lateral motion finally is taken care of by means of the play in the hinge joints. A lower stop peg serves the purpose of limiting vertical deviation when necessary, and weakens the pressure exercised by the elevator muscles on the posterior molars in cases where there is loss of tissue in the region of the temporomaxillary articulation.

*Figs. 106-107* show extensive growth of bone in some of the gunshot fractures of the jaws. This is a rather common condition which results from gunshot fractures and may be accounted for in one of two ways. *First*, that the periosteum with the epiosteum is stripped up from the adjacent fragments and new bone develops therefrom; *second*, that with the loss of substance the force of the depressor muscles acting upon the fragments may be sufficient to set up an irritation which causes a metaplastic change in the connective tissues resulting in the development of bone. These bony spurs vary in size and shape. In some cases the whole floor of the mouth may be filled. At this time, and with our present knowledge of the conditions, we cannot say that this is a permanent growth. In time the osteoclasts may cause a resorption of these spurs in the same manner as they do in the over-production of bone from the external callus in the normal process of repair.

#### ANESTHESIA IN THE REDUCTION OF FRACTURES

It has been the experience of the author that local anesthesia is preferable to general anesthesia in accomplishing reduction of fractures of

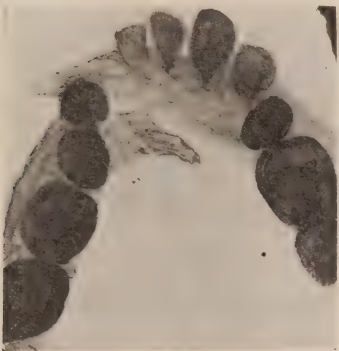


Fig. 106

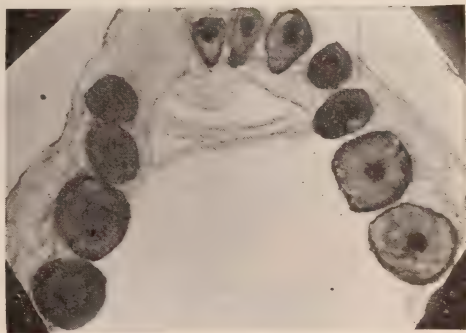


Fig. 107

the jaws. Local anesthesia eliminates the dangers of general anesthesia; it eliminates the probability of the patient's vomiting following the operation, which is of great importance, especially if interdental ligation has been resorted to. It also assures at least a partial co-operation on the part of the patient which is very desirable when endeavoring to establish natural occlusion.

The so-called conductive anesthesia or nerve blocking is the method of choice in producing local anesthesia. This can be accomplished in one of two ways, viz., the intraoral method or the extraoral method.

In many cases of fracture of the jaws, there will be so much traumatism that the intraoral method of conductive anesthesia will not be practicable and again, on account of septic conditions of the oral cavity, a perfectly aseptic technic cannot be carried out by this method. These



objectionable features are all obviated in following the extraoral method in producing conductive anesthesia.

The technic for the intraoral method of conductive anesthesia has been so thoroughly exploited and the method is so well recognized that little will be stated here relative to it. In extraoral conductive anesthesia a most thorough knowledge of the anatomy of the parts involved is absolutely necessary to insure successful results.

The instruments used are either an all-glass or glass and metal syringe; one that can be thoroughly sterilized. Preferably an iridio-platinum



Fig 108

needle, five cm. in length, is indicated. The anesthetic solution is a 2 per cent. novocain-suprarenin isotonic solution.

The extraoral injections must be made under the conditions of surgical cleanliness, otherwise either superficial or deep infection, or both, may follow. The skin of the parts where the needle is to be inserted should be cleansed with green soap followed by alcohol. The parts then should be painted with a 7 per cent. solution, tincture of iodin.

The technic for local anesthetization of the lower jaw may be described as follows: The point of deposition of the anesthetic solution is the same as that in intraoral conductive anesthesia, namely, the pterygo-mandibular space. By palpating with thumb and fingers, the position of the lower border of the internal surface of the body of the mandible is ascertained. The needle is inserted two cm. anterior to the angle of the ramus and pointed toward the tragus of the ear. (*Fig. 108.*) A small amount of solution should be injected to anesthetize the superficial structures. The needle is then advanced toward and backward along the internal surface of the mandible, keeping as close to the bone

as possible along the line of the mylohyoid groove for a distance of four cm. to the pterygomandibular space. Two cc. of the anesthetic solution is here deposited. If this technic is carried out successfully, no obstruction will be encountered by the needle in its path toward the pterygomandibular space. (*Fig. 109.*) It is an easy matter for the needle to strike the mylohyoid ridge and this should indicate that the needle is being passed in a false direction. It should be withdrawn and the direction of the needle changed. The path of the needle follows along the line of the inferior alveolar nerve, and when it is advisable to anesthetize the lingual nerve the needle should be advanced one cm.



Fig. 109

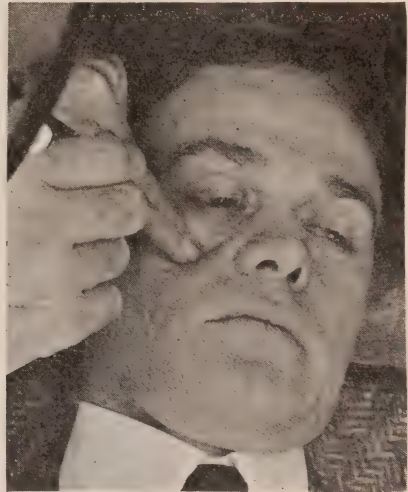


Fig. 110

further, which brings the point of the needle near to the place where the lingual nerve separates from the inferior alveolar nerve. One cc. of the anesthetic solution should be deposited here.

The anastomosis at the symphysis may be taken care of by blocking off the inferior alveolar nerve at the mental foramen of the opposite side. This may be accomplished either intraorally or extraorally. The technic of the extraoral method is as follows: The needle should be inserted one cm. below and three mm. anterior to the apex of the second bicuspid tooth. The needle should be advanced directly to the mental foramen, where one cc. of the anesthetic solution is deposited. The area anesthetized will be all of the lower jaw from the pterygomandibular space to the mental foramen.

When it is desirable to anesthetize the anterior portion of the upper jaw, it can be done by blocking off the infraorbital nerve on one or both sides.

The technic of this operation is as follows: By palpating about one cm. below the infraorbital margin on the anterior or facial surface of the



superior maxilla, the infraorbital foramen may be felt. (*Fig. 110.*) After injecting five min. of the anesthetic solution around the foramen with a fine needle, the point of the needle is inserted into the foramen



Fig. 111

and advanced to the distance of one and one-half cm. (*Fig. 111.*) The needle should be directed slightly toward the median line. One cc. of the anesthetic solution is deposited in the infraorbital canal. Complete

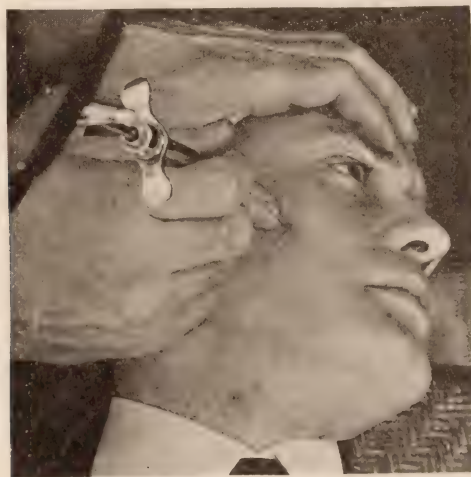


Fig. 112

anesthesia may be obtained of the anterior portion of the maxilla by blocking off the nasopalatine nerve at the incisal foramen, one cm. posterior to the central incisor teeth.

On account of the difficulties of completely blocking off the whole maxillary division of the fifth nerve by the intraoral methods, and in fractures of the maxilla, this is still further complicated, and the extra-oral method is most satisfactory in producing complete anesthesia of the parts supplied by this nerve.

The technic of this injection is as follows: The jaw should be closed. Beginning one cm. below the tragus of the ear a horizontal line four cm. in length is drawn forward. The end of this line marks the place for the insertion of the needle. This point is immediately behind the lower angle of the malar bone. From this point the needle is inserted into the tissues, (*Fig. 112*), and five min. of the anesthetic solution deposited. The needle is advanced then through the masseter muscle and comes in contact with the tuberosity of the maxillary bone, and is advanced care-



Fig. 113

fully along the surface of this bone. The needle should be inserted to a depth of four cm. when it passes into the sphenomaxillary fossa, (*Fig. 113*), when two cc. of the anesthetic solution is deposited. The area anesthetized is the whole half of the maxilla. It usually is necessary to anesthetize both sides in the reduction of fractures of the maxilla.

The duration of the anesthesia is sufficient with any of these injections to complete any ordinary operation, the period being from forty-five minutes to two and one-half hours.

The period of waiting after completing the injection of the anesthetic solution should be from ten to twenty-five minutes.

#### THE END.

NOTE—This completes this most valuable series from the pen of Dr. Lyons. The matter is now to be collated and published in book form. As the edition will be limited, advance subscriptions are advised. The price is not yet definitely determined, but probably around \$1.50. Subscriptions may be sent to THE DENTAL SUMMARY. When the book is ready for delivery advance subscribers shall be advised and remittances may be made at that time.—PUBLISHERS THE DENTAL SUMMARY.



## IDEAS OF PROPERLY HANDLING CHILDREN IN THE DENTAL OFFICE\*

BY DR. L. J. MCRAE, MEMPHIS, TENN.

SINCE THE LAST MEETING of the State Dental Association there has been a radical change in thought. At that time we felt we would win the war at our spare time, with our spare men, and with business going on as usual. Now we feel we are at war with all of our man-power, with all of our accumulated and natural wealth. Then we thought but little of preparedness. Now its value is being demonstrated by the efficiency of our enemy. Then we seldom heard the word "Conservation," now it is on every tongue in the behalf of men, money, time and energy.

From these valuable lessons gathered through observations for the last year, we the members of the greatest preventive profession, should be thoroughly aroused and united in our efforts for health-preparedness of the future manhood of our nation. No greater patriotic service could be rendered our country than child conservation. If our nation is not to perish we must conserve its childhood.

More than 38 per cent. of all deaths occur under the age of fourteen, and most from preventable diseases; then can we not see the wonderful opportunity knocking at the door of every conscientious dentist when we realize that most of these preventable diseases are preventable through the efforts of the dentist?

We hear a great deal about educating the public on the importance of dentistry, and when we speak of the public we usually have in mind its adult population, those who have gone from the various school rooms and are now in pursuit of their active vocations in life—those whose minds are so filled with the things vital to their well-being they have no time for "such frivolous matters": frivolous because the things in which they were not instructed while children are frivolous to them. Then the only ones we can successfully educate on the principles and practice of preventive dentistry are the children. This may be done both in the school room and the office. Much has been said as to the first, and as to the last, I will say no patients should leave our chairs without feeling they are leaving as private pupils as well.

No one should work for children who does not love child-life. And no one should think for a moment that they can have a child believe in them and trust them, when they in turn do not believe in the child. If we do not care for children by nature and rearing, we should make them a study if we are to work for them—else send them to some one who can

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\*Read before the Tennessee State Dental Society, June, 1918.

take a personal interest in them. No one can hope to attain the desired success with children who has as his goal merely the keeping of their mouths in a state of health. This should be kept in mind, but only as a means to the desired end—that end being to convince the child that we hold a partnership in their lives and the good that dentistry will be to them through this partnership. The child readily sees this and with the child only are we able to construct such a relationship.

I have listened closely to the comments of adult patients and I find their ideas of dentistry are those gathered in childhood; therefore I feel the future of dentistry is to be decided largely by our young patients. Then it behooves our entire profession fully to realize this situation, and thereby place the proper emphasis upon this subject.

As we work for children, we should bear in mind that our service for them is greater than the same class of work in the mouths of adults, as an infected mouth of a child is so likely to transmit its infection to some growing vital organ—thereby preventing its full development in keeping with the rest of the body. For example it has been proven that many valvular diseases of the heart in children are due to diseased mouths. Wherever we attend a dental meeting some subject pertaining to root-canal work is most surely to be discussed. We have come to consider it one of our most complex problems. Yet, according to Erwin, more than 75 per cent. of the root-canal cases could have been prevented by the proper care of the mouth before the age of sixteen. By stressing dentistry before this age we eliminate many serious local and general troubles, and the thing our patients most dread—that of pain. Preventive dentistry is the kind the patients are seeking, though they may not know just how, as preventive dentistry is practically painless, and curative dentistry is most always accompanied with pain, and has caused all the ill will toward the dentist and his work.

In conducting a practice for children, too much attention cannot be given to the office arrangement and appearance, as children are much our superiors in observing details. The rooms to make the best appeal to children should be small, neatly furnished, with an abundance of light and ventilation. The pictures should be the portrayal of things most common to their thoughts and nature. The office should have toys in variety appealing to either sex and at varying ages to be used at the discretion of the assistant. When the space is possible, it would be well to have an ante-room to the main reception room fitted with a sand-table and small chairs varying in size, with running water, with fish, birds, palms and flowers. The assistant in admitting children to this room should provide them with play aprons.

The operating room should be constructed noiseproof from all the other rooms, as it is highly necessary to avoid any suggestion that pain is being inflicted. The suite should be so arranged that the patient leaving the chair would not come in contact with the one following,



unless so desired. Some will leave with tears streaming and with horror on their faces. These never should be seen by those waiting. Others will have a bright smile and a happy good-bye, that will inspire in those waiting a desire to see who has caused it. See that this class pass in review before the ones waiting. The operating room should have no display of instruments, skulls, or pictures of anatomy. It should be free from the odor of drugs. It should be flooded with light and ventilation and fragrant with flowers.

Never meet your child patient in the operating room for the first time. At the time the appointment is made get such information as name, age, if ever been to a dentist, and if so did he have trouble in controlling the child and why. If possible know the child socially before having the first sitting. Take time to form an acquaintance, using the information gathered at the time the appointment was made as an introductory to the acquaintance. Find some of their likes, dislikes and peculiarities, and at all times and more especially the first time, be bright and sunny in disposition and get absolute mental control before any work is attempted. On first visit do not force the child to submit to work under protest, unless such is absolutely necessary for the health of the child—then the punishment is self-inflicted, provided there is trouble already in the mouth.

It is a much better policy to master the child than the trouble, because then the trouble for that time and the future can be mastered. But with the trouble mastered without the control of the child, all future visits will be accompanied with much displeasure on the part of both the dentist and the child.

When possible, and it is in most cases, do not hurt the patient on the first visit, for the success of all other sittings is depending largely upon this initial visit.

At all cost to other things, do not deceive children, as deception clings longer to the memory of a child than any other mental impression. Impress them with truthfulness, positiveness and kindness—all of which children hold in great reverence. Thus they will be led to feel they are on a partnership bases, aiming at the welfare of the child.

The parent in most cases should be allowed in the operating room with the child and more especially the first time. The very fact that they are not wanted there frightens the child with the idea of their entering an unusual ordeal where the discipline and control of the parent is being transferred to another, and often to a stranger. The parents should be instructed before entering that their talk and actions are to be under the control of the operator—else the child will likely become confused with conflicting statements between parent and operator, which must be avoided as the operator must have the full confidence and control of the child. The only talking by the operator should be direct to

the patient and it is much more effective for it to be in a very low confidential tone, and in this talk to the patient avoid using words suggestive of things unpleasant, as nerve, hurt, disease, etc., or technical terms, which they are sure to interpret as being disagreeable.

Much of the success in dealing with children may be attained through tact and skill of the assistant. She should have a bright mind, neat in appearance, but not vain in dress, of a happy disposition and fond of children. Such an assistant when trained is absolutely indispensable in any office dealing with children. Ordinarily I take the initiative in the control of the child at the chair, and the assistant reinforces me, but often I find children over whom she can exercise greater control.

Concluding I would say we must lay greater emphasis upon the child welfare of our country through our profession. Then we will not be following dentistry, but dentistry will be following us.

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## TO WHAT EXTENT CAN ROOT FILLINGS MADE BY SOME MODERN METHODS, SEAL BACTERIA OUT OF DENTIN AND CEMENTUM?\*

BY MILTON J. DAMLOS, D. D. S.

DENTAL CORPS EIGHTY-THIRD DIV., U. S. A.

(FROM THE RESEARCH INSTITUTE)

**T**HIS IS TO BE a presentation of laboratory findings in which we shall endeavor to throw a little light upon the efficiency of modern root-canal fillings.

These tests were carried out on freshly-extracted teeth, single-rooted, as much as possible. They were prepared at the institute in the following manner: (1) Teeth were selected, the root-canals of which would be easy of access. (2) The canals were opened and cleaned out by means of Kerr broach reamers. (3) They were then sterilized by live steam heat, at the pressure of thirty pounds for thirty minutes. (4) After being sterilized the teeth were handled differently in the various experiments as will be shown later.

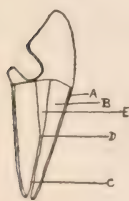
Eleven teeth were used in this first test. They were prepared as described above and sent to a selected dentist to be root-filled. The

### ROOT FILLING EFFICIENCY TESTS

#### SERIES No. 1

11 Sterilized straight teeth used.  
Prepared by Dr. D.  
Root filled by Dr. H.  
Tested and cultured by Dr. D.

Root Filling Material  
Rosin-Chloroform  
Gutta-percha



						Efficiency
A	Cementum	showed a streptococcus growth in	70%			30%
B	Dentin	" " "	" " 90%			10%
C	Root filling	" " "	" " 90%			10%
D	Root filling	" " "	" " 60%			40%
E	Root filling	" " "	" " 40%			60%
		Apical third				
		Middle third				
		Gingival third				

root filling materials were Rosin, Chloroform and Gutta-percha. Upon being root-filled and returned to the institute, the teeth were immersed in a pure fresh culture of Streptococcus. After a lapse of four days they were removed from the media and wiped dry in a sterile towel. To insure further freedom from contamination each tooth was flamed separately before completing the experiment. Each tooth was split longi-

Given as a part of the Seminar at the Ohio State Dental Society, 1917.

tudinally, in a sterile manner, through the root-canal, and cultures taken by means of a sterile bur, from the locations shown as follows in the diagram of (*Series No. 1*):

A Cementum

B Dentin

C Root-filling, Apical third.

D Root-filling, Middle third.

E Root-filling, Gingival third.

The results were grouped together on the chart and as can be seen, were not of very high efficiency.

In this experiment sixty teeth were used. The entire test was carried out in the institute with utmost precautions as to sterile conditions. The root-filling material used was Chloropercha and a Gutta-percha

## ROOT FILLING EFFICIENCY TESTS

### SERIES NO. 2

60 sterile teeth used.

Prepared by Dr. D.

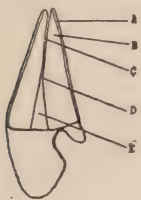
Root filled by Dr. D.

Tested and cultured by Dr. D.

Root Filling Materials

Chloro-percha

Gutta-percha



A	Cementum	showed a streptococcus growth in	15%
B	Dentin	" " " " "	25%
C	Root filling	" " " " "	40%
D	Root filling	" " " " "	60%
E	Root filling	" " " " "	80%
	Apical third		
	Middle third		
	Gingival third		

Efficiency  
85%

75%

60%

40%

20%

point. These root-filling materials were sterilized by means of high heat, either moist, or dry, according to the consistency of the material. The test proceeded as in *Series No. 1*. The chart (*Series No. 2*) shows no marked increase in efficiency.

The next slide (*Series No. 3*) shows a more extensive experiment, running at the same time, three different root-filling materials. Namely: Rosin and Chloroform, Chloropercha, and Paraffin. This test was worked out in the institute in much the same manner as the preceding one. We will note on the chart, four cases of 100 per cent. efficiency, three of them Chloropercha and one of them Rosin and Chloroform. In the case of Chloroform and Rosin it will be noted that one-fifth of the entire number showed 100 per cent. efficient, Chloropercha shows three-thirteenths 100 per cent. efficient, the tests of Paraffin shows practically no efficiency. In this experiment, at least, Chloropercha shows the highest rate.



## ROOT FILLING EFFICIENCY TESTS

## SERIES No. 3

No.	Growth	A	B	C	D	E	Rosin and Chloro-percha	Chloro-percha	Paraffin	Efficiency
1	80%		+	+	+	+		+		20%
2	0%							+		100%
3	60%	+		+		+		+		40%
4	20%					+		+		80%
5	40%				+	+		+		60%
6	60%		+	+	+	+	+		+	40%
7	60%			+	+	+				40%
8	80%	+		+	+	+	+			20%
9	80%		+	+	+	+			+	20%
10	60%			+	+	+	+			40%
11	20%					+		+		80%
12	0%							+		100%
13	20%				+			+		80%
14	20%					+		+		80%
15	20%	+						+		80%
16	0%							+		100%
17	20%				+		+	+		80%
18	20%				+			+		80%
19	0%						+			100%
20	20%				+			+		80%
Percent		15%	15%	35%	50%	55%	Total 5	13	2	
		Cementum near apex	Dentin near apex	Apical third of root filling	Middle third of root filling	Gingival third of root filling				

NOTE—Out of twenty teeth only four equaled 100% efficiency, or a net efficiency of twenty per cent.

## ROOT FILLING EFFICIENCY TESTS

## SERIES No. 4

No.	Growth	Thymoxyl Root Filling						Efficiency
		A	B	C	D	E	F	
1	100%	+	+	+	+	+	+	0%
2	100%	+	+	+	+	+	+	0%
3	50%		+			+	+	50%
4	80%	+		+	+	+	+	20%
5	80%	+	+		+	+	+	20%
6	80%	+	+	+		+	+	20%
7	80%	+	+	+		+	+	20%
8	30%				+		+	70%

NOTE—No tooth was free from infection. Net efficiency 0.0%.

The material used for the next test was obtained from the O. S. U. Dental Clinic, a filling material prepared and used by the school. The efficiency as shown on the chart is net 0.0 per cent.

In this test Pustolene was used. The roots were filled as per instructions and a Gutta-percha point inserted. The efficiency here, also, is practically nil.

## ROOT FILLING EFFICIENCY TESTS

## SERIES No. 5

No.	Growth	Pustolene Root Filling						Efficiency
		A	B	C	D	E	F	
1.....	100%	+	+	+	+	+	+	0%
2.....	100%	+	+	+	+	+	+	0%
3.....	100%	+	+	+	+	+	+	0%
4.....	100%	+	+	+	+	+	+	0%
5.....	100%	+	+	+	+	+	+	0%
6.....	84%	+	+	+	+	+	+	16%
7.....	84%	+	+	+	+	+	+	16%
8.....	66%	+	+	+	+	+	+	34%
9.....	84%	+	+	+	+	+	+	16%
10.....	100%	+	+	+	+	+	+	0%
11.....	84%	+	+	+	+	+	+	16%

Net Efficiency 0.0%.

## ROOT FILLING AND CROWN FILLING EFFICIENCY TESTS

## SERIES No. 6

17 Sterile teeth used. Root filling material chloro-percha and gutta-percha.

1 to 11 inclusive crown filling made of gutta-percha.

12 to 15 inclusive crown filling protected by paraffin coating.

16 and 17 entire tooth surrounded by paraffin, except apex.

No.	A	B	C	D	E	Growth	Efficiency
1.....		+	+		+	60%	40%
2.....			+	+	+	60%	40%
3.....	+	+	+	+	+	100%	0%
4.....	+	+	+	+	+	100%	0%
5.....	+	+	+	+	+	100%	0%
6.....					+	20%	80%
7.....			+	+	+	60%	40%
8.....		+	+		+	60%	40%
9.....				+	+	40%	60%
10.....	+	+			+	60%	40%
11.....		+				20%	80%
12.....	+	+			+	60%	40%
13.....	+	+	+	+	+	100%	0%
14.....					+	20%	80%
15.....	+	+	+	+	+	100%	0%
16.....		+			+	40%	60%
17.....	+		+	+	+	80%	20%
		48%	65%	59%	53%	94%	

Net Efficiency 0.0%.



In *Series No. 6* seventeen teeth were used. The root-filling materials being Chloropercha with a Gutta-percha point. Numbers one to eleven, inclusive, were sealed at the crown end by Gutta-percha, twelve to fourteen were dipped in melted Paraffin in addition to the Gutta-percha, so as to cover the crown with a coating of paraffin. As a further test, the whole of the tooth number 16-17, except the apex, was immersed in paraffin. The percentages here are in no case marked. No difference is noted between the teeth merely filled at the crown end, and leaving the balance of the tooth exposed to the infected culture media, and the teeth protected in part by paraffin. Conclusion is therefore drawn that the infection entered through the apical foramen.

This next slide shows the results obtained by the co-operation of six selected dentists in practice. The teeth were placed in Plaster of Paris blocks in such a manner as to leave only the crown exposed. They were

### ROOT FILLING EFFICIENCY TESTS

#### SERIES NO. 7

Made by six different dentists.

	No. 28	No. 4	No. 7	No. 10	No. 2	No. 11	No. 12	No. 13
A.....	+	+		+	+		+	
B.....	+			+	+		+	
C.....	+	+			+			
D.....	+	+						
E.....	+			+				
F.....	+			+				

then sterilized, sent to the selected dentists to be root-filled. They were then extracted from the Plaster of Paris blocks and tested the same as described in the other experiments, with the results shown in the chart of *Series No. 7*. Numbers seven to eleven and thirteen show no growth in any instance, therefore are 100 per cent. efficient. Whether or not a decrease of efficiency would be shown if the teeth would be left in the infected media longer, has not been determined.

## PREVENTIVE DENTISTRY\*

BY DAVID P HOUSTON, D. D.S., CHATTANOOGA, TENN.

THE NOTEWORTHY ADVANCES of dentistry during the past twenty-five years, and more particularly the recognition obtained for the profession by the government since the beginning of the great world war, is a source of great pleasure to every dentist who loves his profession and is proud of his calling.

My friends, I feel that dentistry is both on the offensive and the defensive in the struggle for the emancipation of the human race from the ills that follow in the wake of neglected mouths. Defensive, in that we truly must substantiate the great lessons taught us by our professors and create a steadfast confidence in the minds of the public that we, as a profession, are on the square and have first and foremost in our minds and hearts the betterment of mankind.

Offensive, in that we may not rest on our present achievements but drive on with grit and determination and self reliance, seeking always to co-ordinate all the forces of our different organizations to the ultimate purpose of practically eradicating dental decay and its train of evils.

The literature of our profession is replete with masterly articles on such subjects as the treatment of root canals, the technic of extraction, and various other operations of a reparative, scientific and palliative nature, and of course there has been much written on preventive dentistry; but I think you will admit that this subject at least has not occupied the front page in big bold type. And now I come before you pleading for a more concerted action in dealing with the subject of preventive dentistry, which of course involves the education of the masses in mouth hygiene.

If the benefits to be derived from mouth hygiene is a boon to a certain class it is likewise a boon to every individual in the world, and there is a class even in this day of enlightenment who do not know what a tooth brush is. Therefore, is it not altogether fitting and proper that our organization, and the organizations of other states foster a well-conceived propaganda for the education of the masses in the art of prevention, rather than devote all of our time to the consideration of methods for the restoration of defects which *might* have been prevented?

Practically the whole world is in arms now with the forces of autocracy arrayed against the forces of democracy and humanity; and drawing a lesson from this alignment of forces I would have every true dentist enlist in the promotion of the broad interest of our profession, feeling in a measure he is the peer of any and all. Realizing too that as such

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\*Read before the Tennessee State Dental Society, June, 1918.



he has a certain responsibility and is a debtor to his profession and should seek to adorn it.

We in this country believe in authority and under certain circumstances in concentrated authority; but this authority is of right and ought to be delegated authority (not the "divine right of kings" kind.) Therefore, it is only through *co-operation* that great things of a *constructive* nature can be accomplished. It is only through *education* that men see the need of co-operation and seeing the need, unless there is good fellowship, mutual understanding and devotion to the cause of unselfish service, little will be accomplished.

These preliminary remarks are as a bombardment, preparatory to the infantry attack. I want to prepare your minds so that you gladly will surrender to the suggestions I am about to make. Of course I expect some counter-attacks, but I trust when the battle is over there will be some notable gains to the credit of our *association* relative to constructive work along the lines of preventive dentistry and dental education of the masses.

*First*, I would suggest an oral hygiene committee, chosen for their executive fitness and their zeal in the promotion of measures to this end; one from each grand division of the state, these to merit and hold the confidence of the membership of our association and their co-operation.

*Second*, that each county in the state be organized under the direction of this committee for the purpose of giving talks to every school in the state on the subject of mouth hygiene and related subjects. A wide-awake and efficient central committee could inject enthusiasm into the local organization, and initiative coming from the outside would be more effective in many instances than if originated in the brain of some local enthusiast. All work of this character should be done in the name of the local and state organizations and the motto, "He profits most who serves best" could be more easily applied.

In Chattanooga we have a free municipal clinic carried on by Chattanooga Dental Society. Every man shares alike in the responsibility and in whatever good that may be accomplished. I am pleased to say that nearly every ethical man in town has done his part willingly. If he has not the fault is all his own for equal opportunity was given all and none were slighted. In this same way every man could take his turn at giving a simple talk to the different schools in a truly democratic way. This being done by the local societies would have more effect than coming from an individual.

The central committee would map out a course and furnish data, etc., so that it would not be a difficult task for the local man. So you see, gentlemen, a plan of this kind involves a deep conviction that the public needs education in regard to their teeth and the proper care of same while it is yet time for preventive measures and the willingness to co-operate with each other, forgetting the petty jealousies that abound in

every community to a certain extent. It is a subject which will require much thought and careful administration if it ever amounts to anything. But think how proud we would be if we could say that we as an organization were sponsor for the systematic education of the men and women of tomorrow, on a subject that is of vital importance as regards appearance, comfort, health and efficiency for good citizenship.

As professional men, we know that nothing conduces to happiness as much as being absorbed in effective work, work that leads to the efficiency and happiness of mankind. For one to work with wit and will he must be imbued with a steadfast feeling and constant consciousness of the worth of his work to himself and his fellowman. We have this stimulus. As before stated, never has this been so fully accentuated as by our government in the selection of a great army. More men have been rejected as physically unfit because of bad teeth than for any other cause. Men with defective teeth because of want of care and dental attention can not make good soldiers. Pat's question should have been answered in the affirmative. He had stood all the physical examinations satisfactorily, when he applied voluntarily to be inducted into the army, and was sent into the dental examiner for the final test. The dentist, after a careful examination, told him he would have to be rejected because of bad teeth. Pat looked at him in surprise, mingled with disgust, and asked: "Do you expect me to eat the Germans?"

Figuratively, the army with the best teeth eats the other. Literally, not only does personal charm, happiness and efficiency depend on the proper care, repair and treatment of the teeth; but the destiny of nations depends upon good teeth.

Our field is without boundaries, and it behooves us, you and me, as patriotic citizens of the greatest nation on earth, to avail ourselves of every opportunity to become 100 per cent. efficient in our great and all-important work. I earnestly commend these remarks and recommendations to your careful consideration.

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## WHEN MANY SIX-YEAR MOLARS CAN BE KEPT VITAL AND SAVED

BY J. A. STUNTEBECK, D.D.S.

DENTIST DEPARTMENT OF HEALTH, CINCINNATI, OHIO

**T**HE FOLLOWING DATA on dental services for second grade pupils in a Cincinnati school clinic, will show how the pulps of first permanent molars were kept vital, and how molars can be saved by giving attention to the teeth of children at that time.

Of fifty-eight second grade children whose teeth were given attention, only nine had first permanent molars without cavities, the other forty-nine pupils requiring one hundred and nine fillings in the six-year molars erupted only a year before. Many decayed molars if not given attention at that time would be lost in another year or two.

During the school term of 1917-1918, Mr. J. S. Hauer, the principal of the Sixth District School, and the writer, decided to give thorough attention to the teeth of second grade pupils, in that school, believing that much good could be rendered the children at that age, more than would be possible later on. The teeth of all the second grade pupils in four rooms received attention. Following are results of work for children of two of the rooms whom the writer attended to personally, and may prove of interest:

Number of pupils receiving attention—58.

Average age of pupil—7 yrs. 4 mos.

<i>Permanent Teeth</i> —Filling—Centrals—	3 Cement.
Laterals—	1 Cement.
Bicuspid—	1 Cement—1 Amalgam.
6 yr. Molars—Upper	3 Oxy-phos.-Zn. Cement.
	1 Copper Cement.
	44 Amalgam.
6 yr. Molars—Lower	7 Oxy-phos.-Zn. Cement.
	2 Copper Cement.
	52 Amalgam.
Root Canal Tr'ts—1 (child age 10)	
Molars—	1 (child age 9)
Extractions—None.	

No cavities in permanent teeth—12 pupils; of this number three had previous attention, when fillings were made.

*Deciduous Teeth*—Fillings—Centrals and Laterals—None.

1st Premolars—	8 Cement.
2nd Premolars—	25 Cement.
Silver Nitrate Tr'ts—	29

Pulp chamber exposed—26  
Extractions—Upper Centrals—11.  
                  Lower Centrals—None.  
                  Upper Laterals— 11.  
                  Lower Laterals— 1.  
                  Upper Cuspids— 2.  
                  Lower Cuspids— 1.  
                  Upper 1st Premolars—21.  
                  Lower 1st Premolars—23.  
                  Upper 2nd Premolars—18.  
                  Lower 2nd Premolars—30.

At this age (7 yrs.) the children are more submissive, and I believe more good can be accomplished than later on. More permanent molars will be saved, consequently less malocclusion in later life, (in this connection notice that not any permanent molars were extracted, although one hundred and nine fillings were made in first molars.) The cavities are more shallow, operations can be performed with less pain, and few compound fillings are necessary. The children early become accustomed to the necessity of dental attention, and will not have so much reason for fear of the dentist. Obviates the necessity for much root-canal work later on to save the molars—much time has been saved thereby.

All teeth were given thorough prophylactic treatment, pupils were given talks on the care of the teeth; tooth-brush instructions and drills were given by the dental assistant and teachers.

It is the principal's intention to watch the school life of these pupils as much as is possible in a district where the population is more or less unsettled.

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### North-Central Ohio

The annual session of the North-Central Ohio Dental Society, scheduled to take place in Sandusky, October 16th, but postponed on account of influenza, will be held on Wednesday afternoon, January 15th, 1919, with the same program as the one planned for October.



## EXODONTIA OF IMPACTED TEETH\*

BY DR. J. L. AUSTIN, CHATTANOOGA, TENN.

IN THE LAST SIX YEARS we have gone through a great evolution along lines of focal infection—only yesterday we were conserving all the teeth we thought strong enough to remain in the mouth, using them as bridge abutments, for crowns and fillings. We were heartily insisting that our patients did not have teeth extracted unless so loosened by pyorrhea that they would almost fall out. An impacted third molar or an impacted cuspid was considered only lightly, and we did not bother ourselves about their removal. We were studying mechanical and esthetic dentistry, which would give to our patients better masticatory use of their teeth, and improve their looks, disregarding all hygienic laws with a great army of these restorations.

In this day of enlightenment on focal infection, we are facing quite a different proposition. We are today extracting a great many of these teeth, which we have worked so hard to conserve. It is our good fortune today to stand at the threshold, and come nearer holding the situation of focal infection in hand than any other class of medical men. We have before us the getting rid of thousands of cases of oral foci, absolutely due to the dentistry we have been practicing, and besides we have facing us on the other hand, the problem of eliminating such foci before our patients have secondary infection.

I would call your attention to the principal classes of impactions. There are a great many classes of impaction to be dealt with, and I shall not attempt to classify them. I will call your attention only to the ones most frequently impacted, and try to give you a technic by which you can remove these teeth with a minimum amount of traumatism.

First we will consider the lower impacted third molars, of which there are a great many. And the next most commonly encountered are the superior cuspids, then comes the upper third molar, and lastly, but yet a good many cases of impacted bicuspids, lateral incisors and even a few second molars.

Of all the types of impacted teeth we would consider the impacted lower third molar is the most important. These teeth may range from a slight gum impaction to standing at right angles to the second molar, or even more, with their roots often extending into the inferior dental canal, causing a great annoyance by pressure. Occasionally we find one of these teeth misplaced in the body of the ramus, but these are so rare that I will not attempt to touch upon them.

I do not believe, personally, that every dentist should attempt the extraction of all impacted teeth. Yet he should familiarize himself

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\*Read before the Tennessee State Dental Society, June, 1918.

with these conditions until he is able to diagnose a case and then send this case to a man who specializes in such extractions, unless, however, the general practitioner wishes to go into this class of work to such an extent as to thoroughly equip himself with the proper instruments and knowledge which is required for success. It is a class of work in which he must have precision and work to a definite end, and it is a surgical procedure worthy of an aseptic operation.

I think the dentist's first duty to his patients is to impress them with the fact that he is about to enter upon a surgical operation and not merely the extraction of a tooth. You can better control your patients if they realize that you are going into something with more or less seriousness; and you should have a fee which would compensate you for such work.

The next step is a clear diagnosis, which is an absolute impossibility without a good radiograph. It often is necessary to make a radiograph at right angles with the tooth and then another with the long axis to ascertain the lateral position, where they are hidden beneath the tissues.

The next consideration would be proper instruments. The operator should possess a good selection of chisels, elevators, lances, bone forceps, curets, etc. Personally, I use Dr. Winter's chisels almost exclusively in my impacted lower third molars; and the mallet and chisels in most of my impacted cuspids and upper third molars. And I am indebted very largely for this technic to Dr. Chalmers J. Lyons.

The next, and an important question, is that of anesthesia. I do not consider that there are more than two anesthetics for impacted teeth, —*first*, conductive or nerve blocking, and *second*, ether. I do not consider gas-oxygen indicated in this class of work, except for the slightly impacted teeth where you will not consume a great deal of time, or for the expert exodontist, as your anesthesia is too uncertain, and it is too hard to keep your patient well under. There is another contra-indication for gas-oxygen, and this is the fact that it will cause the operator ordinarily to rush more than he would with ether or conductive.

In the case of ether, it is best to take your patient to the hospital. *First*, you do not want ether given in your office, and *second*, your patient should have hospital accommodations until he is thoroughly out from under the ether.

We will now consider the impacted lower third molar. Supposing we are to use conductive anesthesia for this operation. The technic will not differ from the technic used under ether. After the injection is made, wait for perfect anesthesia, then make a surgically clean field for your operation. Take all the aseptic precautions. The teeth should be well brushed, the gums well sponged, after which sponge with alcohol, followed by tincture of iodine, using cotton rolls to wall off the saliva, and place a saliva ejector in the mouth to take care of the excess saliva;



after which make a longitudinal incision in the gum, splitting through the periosteum, and then raising the periosteum up and back to the buccal and lingual as far as the apical end of the tooth, cut away with the Winter chisel, shaving the bone away until you have cut away pretty well all the occlusal process of the bone. With the chisel press the lingual plate back from the tooth, then cut a buccal slot down by the side of the tooth, well enough to place an elevator, and for this I prefer an elevator that I will show you, gotten out by Ash & Sons, of England. If the hammer and chisel are used, cut the bone in the same manner and pretty well cut your tooth out instead of trying to force it out with an elevator or forceps. Try your elevator and if the tooth does not turn loose, cut more, cut until you get mobility—remember that cutting is not so serious to your patient as would be too much force with an elevator. Elevate from the buccal to the lingual, pressing the lingual plate inward and you will find your tooth will be very easily dislodged.

Personally, I do not believe a bur has a place in the extraction of impacted teeth. We certainly can follow our landmarks very much better with a chisel than we can with a bur. Another contra-indication for the bur is that it clogs, produces heat, and leaves a great deal of debris in the wound. Forceps are bad in this kind of work because the force with forceps is very uncertain.

Once in a great while you will find the third molar placed buccally to the second molar, when you would not use the elevator in pushing it to the lingual, but elevate to the occlusal.

After you have removed your tooth, if you have an area of infection, you should curette out all necrosed bone, mop well with tincture of iodine, and pack with gauze saturated with eucalypti paste. When I say pack well, I do not mean pack tightly but loosely, placing the gauze well into the cavity. In some cases with slight or no infection, it is good to make one or two sutures, in the posterior part of the wound, letting the gauze extend out through the anterior portion. This packing should be removed at the end of twenty-four hours; in most cases, repacked and changed every twenty-four hours for several days. In the slight cases, however, you may only pack the first twenty-four hours and keep up your normal salt irrigation once a day until you have healing.

We will now take the impacted cuspid. First we secure our anesthesia as before, make the incision as nearly as possible horizontally to the long axis of the tooth, separate the periosteum from the bone, and with the chisel cut down until we strike the tooth, then we have our land-mark to go by. Cut away following this tooth until we have enough process cut away that it would seem advisable to use an elevator. At this point try the elevator, if the tooth is still tightly retained, cut more until the elevator begins to move it, at which time we can elevate the tooth out very easily. In most cases, I would suggest suturing and leaving only a small opening at the most convenient point for the gauze.

Next we will consider the upper impacted third molar. These very often are lying in the floor and posterior walls of the antrum. With the same preparation for their extraction that we have mentioned previously, split the gum and periosteum well back, chisel away both to the buccal and lingual, in many cases until we can take hold of the tooth with the forceps, or by the use of the elevator, being careful not to fracture the tuberosity but using very delicate elevator or forceps technic, we may easily remove the tooth. After which take a probe and see if we have an opening into the antrum. If so, this should be well opened, the bony spiculæ trimmed away, packed for the first twenty-four hours, irrigated with normal salt solution thereafter for several days, until the wound is healed.

Then comes our numerous other teeth, which are seldom but occasionally impacted, the most frequent of which is the bicuspid. Usually by the straight shank elevator and a little chiselling these teeth can be removed very easily, after which it is seldom necessary to pack. The main point to remember is: Do not produce harm to the adjoining teeth in directing our pressure against them.

We should explain just here to the patient that they may expect pain, then if it fails to come they will be agreeably surprised.

Just at this time I would like to mention the fee for this class of work. It is always best to discuss this before even starting the work, explaining to the patient that we will expect a surgical fee, and that it is not the ordinary class of extraction. As to what the fee should be, depends upon the individual, as each individual must arrange his own fees. This should be based upon what the dentist considers proper remuneration for the work, after treatment, and responsibility to be assumed.

I do not believe, as a rule, the dentist will lose a patient by naming the fee beforehand, and if so, he is lucky. If we ask a good fee for this class of work, though it may surprise the patient at first, when we have gone into detail and explained to him just what it means, as a rule, we have an appreciative patient, who will, in case he is not able to pay the fee, be very frank and explain his financial condition, after which, in a great many cases we will give our services free of charge, or practically so. In other words it is best to settle a difference before we have a difference. And in case somebody gets a good fee for removing a badly-impacted tooth, just remember this; that only helps us as dentists to establish a better fee for better work, and above all things, we should not make the suggestion that the patient paid dearly for the operation, as in all probability, by paying a large fee to the man who did a good, clean operation, he came out very much cheaper than he would to the knocker who would have done it for a fee of one dollar.



## VALUE OF ORTHODONTIC TREATMENT\*

BY OREN A. OLIVER, D.D.S., NASHVILLE, TENN.

PROFESSOR OF ORTHODONTIA, VANDERBILT UNIVERSITY DENTAL SCHOOL; INSTRUCTOR IN  
THE DEWEY SCHOOL OF ORTHODONTIA

ORTHODONTIA is that science which has for its object the correction of malocclusion of the teeth. Malocclusion is simply the deviation from normal occlusion to such an extent as to interfere with the normal functions of the teeth. The malocclusion of the teeth is spoken of in two general terms, "Position of Malocclusion" and "Classes of Malocclusion."

Position of Malocclusion refers to the position of the individual teeth in relation to the line of occlusion and the median line of the face. There are seven different positions and the teeth may occupy any four of these at the same time—mesio-version, disto-version, labio-version, linguo-version, infra-version, supra-version, per-version and torsi-version.

The Classes of Malocclusion deal with the relation of the lower arch to the upper and are divided into *nuetro*-clusion, *disto*-clusion and *mesio*-clusion.

The science of orthodontia has taught us the necessity of the normal occlusion of the teeth, that they may accomplish their proper functions.

At this day and time there is no reason for extraction as a correction of malocclusion, and the dentist who does extract teeth to assist or aid in simplifying the case does not appreciate or understand the science and practice of orthodontia. When teeth are extracted to correct a case of this kind, ninety per cent. of the patients are in a worse condition than before. In practicing this method of extraction for correction, one deformity is overcome by the probable cost of producing a greater one.

Modern orthodontia requires a complete knowledge of the physiological development of the dental arches and the surrounding structure. When the arches are not fully developed, the surrounding structures are interfered with, and in time will cause some one of the above-mentioned classes of malocclusion.

The proper diagnosis in the practice of orthodontia is essential and absolutely necessary to the proper treatment and correction of a case of malocclusion, as in any specialty of the healing art. The proper diagnosis, classification and treatment of a case is based upon the surrounding physiological structure and position of the teeth, the normal relation of the arches, and the incline planes of the teeth. A correct knowledge of anatomy and physiology of the nasal cavities and accessory sinuses

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\*Read before the Tennessee State Dental Society June, 1918.

to understand the various abnormal conditions found in the mouth and nose.

The orthodontists cannot work entirely alone but should have the co-operation of the family dentist, rhinologist and physician. The work of the rhinologist especially is not complete in many cases without the aid of the orthodontist, and many times the work of the orthodontist is not satisfactory without the aid and assistance of the rhinologist. There is no question but that there is a close relation between the operations of the two specialists and many are the cases of the nose and throat which cannot be treated successfully except in conjunction with the orthodontic treatment.

During the past few years, a large number of articles dealing with malocclusion have called attention to the fact that mouth breathing is a very important factor in the production of these deformities. The cause of mouth breathing has not been given as much attention by the dental profession as it should have received, and therefore this paper will deal primarily with the direct results of adenoids and tonsils, and conditions associated with them. In speaking of adenoids and tonsils, we may state that they include a group of lymphoid tissues, located in the naso-pharynx. This lymphoid tissue has received considerable attention from the medical profession in times past, and has been recognized as a prolific source of infection, causing it to be called the "vicious circle."

The lymphoid tissue located in the pharynx may be termed a circle because certain masses are located in the different parts of the pharynx, connected with lymph channels in such a manner as to form a complete chain of lymphoid tissue surrounding the nasal and oral pharynx. These masses of lymphoid tissue have been named tonsils by the anatomist, although the lay public when speaking of tonsils generally only include that mass of lymphoid tissue located in the oral pharynx, between the anterior and posterior pillars of the fossæ.

The adenoids proper are a mass of lymphoid tissue located in the naso-pharynx just posteriorly to and above the soft palate at the point corresponding to the base of the sphenoid bone. This mass of lymphoid tissue also has been called the pharyngeal tonsil, because of its location in the naso-pharynx. It is composed principally of this mass of soft lymphoid tissue, and has a very small connective tissue covering, and consequently is the softest mass of lymphoid tissue in the pharynx. It has been named adenoid tissue because it closely resembles a glandular structure; but it is not a glandular tissue. This lymphoid tissue is present in every child and only when it becomes sufficiently large to project forward does it come in contact with the soft palate, and thus becomes a pathological factor in the production of mouth breathing.

If the lymphoid tissue or adenoids located in the naso-pharynx becomes sufficiently large to obstruct the nasal respiration, the individual



immediately becomes a mouth breather. As a result of the induction of mouth breathing, the adenoid tissue becomes a potent factor in producing a series of deformities through lack of development, which is noticed in a large number of individuals who are chronic mouth breathers. It must be remembered that the adenoid tissue located in the nasopharynx is the most prolific cause of mouth breathing in children, and a large number of mal-developments that follow. They also are produced by a series of changes, which are brought about by mouth breathing regardless of cause.

In order for the nasal and oral cavities to develop as they should we must have normal conditions, known as the forces of occlusion, one of which is normal atmospheric pressure, and another normal muscular pressure. In the normal individual, during normal respiration, the lips are closed, and the air passes through the nasal cavities, and exerts force upon all the walls of the nose. The force exerted upon the walls in nasal breathing causes a normal development of the nasal cavities, which includes a downward growth of the roof of the mouth, and thereby causes a proper development of the nasal septum.

During normal breathing the mouth is closed, and the tongue occupies the whole of the oral cavity with the exception of a small space between the central portion of the tongue, and the extreme end of the roof of the mouth. The back portion of the tongue is in contact with the soft palate, thereby producing a vacuum between the base of the tongue and the soft palate, and the lips in front, which is for the purpose of holding the mandible in the proper position. In normal breathers the mandible is not closed by muscular effort, at least it is not kept closed by muscular effort, but held in position by atmospheric pressure resulting from the vacuum produced between the palate and the tongue.

We will observe in normal breathers that the mylohyoid muscles to a certain extent do not drop directly from their origin at the mandible, but are in a more or less right angle arrangement due to the fact that atmospheric pressure holds the soft tissue under the tongue, up against the tongue, and thereby gives a square appearance to the mandible. In mouth breathing the mylohyoid muscle and the tissue under the tongue drop downward, resulting in a diagonal line being formed between the point of the chin and the hyoid bone.

In mouth breathing we lose the normal force of atmospheric pressure during respiration, and we lose the normal action of the tongue in these developments of the dental arches, and the restraining influence of the upper and lower lip of the anterior teeth, which result in a series of deformities developing, which may be described as follows:

In mouth breathing we find the upper dental arch does not develop laterally as it should, and consequently remains in a narrow condition. In addition to the lack of development we also find there is a lack of

downward growth from the roof of the mouth, which results in the roof of the mouth being too close to the roof of the nose.

As a result of this the nasal septum does not have sufficient room to grow downward, and consequently in a large number of cases becomes deflected in the form of the letter S, presenting one or two curvatures from above downward.

The mouth being held open there is no restraining influence exerted upon the upper anterior teeth, and consequently there is a tendency for them to protrude, and this protrusion is further assisted by the fact that the lower lip falls between the upper and lower teeth in such a manner as to assist in forcing the upper incisors forward.

As soon as the individual becomes a mouth breather the mandible is held open, as a result of this the muscles of the mandible exert downward pull upon the mandible which retards the development of the body of the bone forward.

The lack of forward growth of the mandible very soon allows the distal relations to develop which results in the lower arch being distal to the upper arch.

As a result of these abnormal forces of occlusion, the facial deformity and malocclusion tend to become worse as the individual grows older. In a large number of these individuals, who are mouth breathers, we also find enlargement of the faucial tonsil, which is a mass of lymphoid tissue located between the anterior and posterior pillars of the fossæ.

These are the so-called tonsils, which the lay public understands or knows about when one has an attack of tonsilitis. The faucial tonsil does not exert as deleterious an influence upon the dental arches, and does not directly produce the prolific cases of malocclusion, as does the hypertrophy of the naso-pharyngeal tonsil of the adenoid tissue, because of the fact that they themselves do not produce mouth breathing. We find however, that inflammation of the faucial tonsil in young children is very apt to produce a different type of malocclusion than that which is produced in the typical mouth breather. The irritation of the upper teeth causes the lower lip to become thickened, which in time causes the upper teeth to protrude forward.

Malocclusion nearly always begins during the period of tooth eruption, and very often is progressive, remaining so until all the permanent teeth are erupted. The period of eruption of the teeth must be considered as a critical one in a child's life. It must be regarded as a time when the relation of the teeth, the dental arches, and the adjacent parts occupy a normal position or an abnormal position, of a greater or lesser degree.

It is the duty of the family dentist to give this matter deep consideration and to advise the parents whether or not the masticatory organs are developing correctly. You can see hundreds of children growing



into manhood and womanhood deprived of orthodontic treatment, and if you will make a careful study of the mouths of children you will see the arrested development of the dental arches and the jaws in the majority of cases. Such conditions are among the first steps of progressive malocclusion, which will, as time goes on, become worse both in malocclusion and facial deformity.

I am often asked at what age I would advise the correction of malocclusion. My answer is, the younger the patient the better and easier corrected. In other words, just as soon as a child shows a tendency for the teeth to erupt in an abnormal position. This old saying, "Wait until you are twelve or fifteen years old" is, in my opinion, doing an injustice to the patient. The earlier the treatment the less complicated the case is going to be and the better results you will get in both occlusion and facial outline. By correction of these cases early, marked facial deformities can be overcome, and thus every child can be given the opportunity of developing normally, thereby permitting normal functions of the teeth and assisting respiration and digestion.

As to the length of time it requires to correct the case, it all depends upon the class and type of the individual case. However, in general the time for the completion of a case is from one to three years. In many cases, if seen early, the work is simple to correct, but if left till later in life becomes complicated and requires much longer time for treatment.

The causes of malocclusion are many and varied. The following are some etiological factors, which are divided into two groups, based *first*, upon the time the factor occurred, *second*, upon the manner of the occurrence. As to time they are divided into inherited, congenital and acquired: as to manner into local, general or constitutional. Inherited causes are those conditions which are transmitted from parents to child; congenital causes are those which occur in the embryo before life. The most frequent congenital conditions which have to do with the malocclusion of the teeth are harelip and cleft palate. Another condition is supernumerary and missing teeth. Acquired factors are those that occur after the birth of the individual.

The early loss of the deciduous teeth may be due to constitutional or local causes. The early loss of these teeth, either upper or lower, may produce a lack of development in the region in which they are lost. This loss destroys approximal contact and allows the space to be closed in, often resulting in an interlocking of the permanent teeth. Faulty filling of the deciduous teeth also will cause malocclusion, making it just as important to fill these teeth correctly as the permanent teeth.

General or constitutional causes of malocclusion include those that affect the general function of the individual to such an extent as to interfere with the development of the teeth or the surrounding structures

supporting the teeth. There are a number of diseases that affect the general health to such an extent as to interfere with the normal forces of occlusion and therefore produce malocclusion. Also many diseases affect the development of the dental arch in one way or another. Scarlet fever, measles and chickenpox are among those that cause high fever and in turn exert a weakness upon the epithelial structure, thereby causing a faulty shape in the teeth. Rickets is a general disease that causes a great many cases of malocclusion, being a disease of malnutrition, characterized by faulty bone formation. As a result of faulty bone formation, there is not enough support given to the teeth to cause them to assume their natural position.

The tardy eruption of permanent teeth is another frequent cause of malocclusion. Upon the loss of permanent teeth it produces a large per cent. of the irregularities found in the mouths of adults. For example, the early loss of the first permanent molar always produces a malocclusion which is very difficult to correct. Therefore it is very important for the family dentist to look carefully after these teeth, for they erupt between the ages of five and seven years, while the child is losing the deciduous teeth.

It is of great importance that all broken down or decayed teeth be restored with fillings which have proper approximal contact, and that all fillings be carved to the right occlusion. A neglect of any of these things will cause malocclusion. Mouth breathing, thumb sucking, finger sucking, lip biting, pacifiers and lip sucking also tend to lead toward malocclusion.

The loss of the deciduous molar permits the permanent molar to drift forward, which often results in the interlocking of the first premolar when it attempts to erupt, and often is responsible for abnormal mesio-distal relation of the affected side of the arches.

An hypothesis has been assumed by Dr. Dewey which is, in effect;—“Given the loss of one or more deciduous teeth it is quite possible to prognose and describe the resulting malocclusion which will arise in the following permanent set of teeth.” The loss of the first permanent molar at any age does infinite damage to the occlusion of the teeth. It makes no difference whether these upper or lower molars are lost on the same side or on opposite side, or whether one or all of these are lost, the malocclusion will result and will be very much in evidence. Where teeth are lost early on one side and not on the other, many times facial balance is disturbed on account of abnormal development of the buccinator or masseter muscles on the side where mastication is done, and marked lack of development on the side which has been unable to perform its duty of masticating functions.

From the benefits mentioned above, it is shown how necessary the orthodontic treatment is. It therefore becomes necessary to educate



the public that the greatest value of orthodontic treatment lies, not in the esthetic side but in the benefits which occur when the teeth are placed in normal occlusion, thereby eliminating a great many dental ills to which malocclusion is a preparatory cause. It is the duty of every dentist in referring a case to be corrected to see that the condition of the oral cavity of the patient is what it should be to receive a set of orthodontic appliances. For it must be remembered that in the majority of such cases, appliances of some sort will be required at intervals if not continuously for several years, depending upon the magnitude and complications of the case. All cavities should be filled and all rough edges should be fairly polished according to oral prophylactic standards, so as to place the teeth in the best possible condition to be kept clean and free from bacterial vices during the orthodontic treatment. It, therefore, becomes the duty of every dentist, as well as every physician, if he wishes to co-operate to the fullest extent for the benefit of the children intrusted to his care, to be ever watchful for any manifestation, so that he may use every possible means to break up the habit at the beginning; for the longer habits are continued the more difficult they are to overcome. It is a rare thing to find parents who are cognizant of the habits of their child and when they are they have not the slightest conception of the bad effects of these habits. Wherever it is possible to ascertain the cause of the habit, the cure becomes far more certain.

The age at which the patient should be referred to the orthodontist is a mooted question, but it is safe to say that ninety per cent. of the orthodontists would agree that all orthodontic treatment should be completed by the time the permanent teeth that replace the deciduous ones are in full eruption. Orthodontia then becomes an aiding process and the final result is the best that can be obtained. It is proper to consider why this is so. The deciduous set consists of twenty teeth, completely erupted at the end of the third year. If normal, the lower teeth will be found to be in a definite relation to the upper ones. The incisors, both upper and lower, are in contact with their approximating neighbor. By the time the first permanent molars are in full eruption, if normal development is not interfered with, there will be a decided change in the size of the deciduous dental arches, resulting in spaces in the deciduous incisor region, both upper and lower. Wherever such spaces fail to appear it is safe to assume that there will not be sufficient room in the anterior part of the arches to accommodate the permanent incisors when they erupt, owing to the fact that these teeth are always considerable larger than the deciduous ones which they replace. Lack of room for eruption of the incisors frequently results in what might justly be considered inaction of the number of teeth. That is, the crowded condition of these teeth is responsible for the reflex disturbance which results in manifestations to the detriment of the child; this is apparent to those who have scarce considered the subject. It is quite frequent for the chil-

dren at this age to develop habits of various kinds, such as tongue and lip sucking, sucking the thumb or finger, biting the nails, biting the cheek, drawing in the lip in various ways, pressing the teeth with the tongue, licking the lips, etc. These habits are the result of reflected disturbances. And such habits influence the position of the eruption of the teeth.

Other reasons why it is better that the treatment should be finished at this age are that children do not object to the appliances even if they show, that their tissue possesses far greater recuperative powers, that the strain of their school work is lighter and that it is finished prior to puberty, which usually is a strain on both male and female. In the face of the above, how can any conscientious dentist instruct the parent to delay the treatment until all of the permanent teeth are present?

The benefits derived from orthodontic treatment are as numerous as the causes of malocclusion. Summing up a few of them we name normal occlusion, normal breathing, proper mastication, normal facial outlines, improved digestion and prevention of pyorrhea and caries. These far-reaching results make it necessary to impress upon our patients that the greatest value of orthodontic treatment lies not in the esthetic side, but is derived from the benefits which occur when the teeth are placed in normal occlusion, thereby eliminating many dental and systemic ills augmented or caused by malocclusion.

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### **Removing Gold Inlay Without Endangering Tooth or Inlay**

Drill a hole in the inlay at the logical point, of a proper size to engage moderately a small slender screw elevator (Morrison screw porte, No. 1, No. 2 and No. 3.)

Insert the porte to fair degree of firmness, place small hickory stick or any convenient instrument in the "eye" of the porte for handle and pull steadily in proper direction.

The most complex and firmest inlays in teeth with weakest cavity walls can be removed with surprising ease and safety.

To repair the small opening made in the inlay requires very little time with bits of solder and blowpipe.

—Clarence H. Wright, *Dental Review*.



# CORRESPONDENCE

## Preparedness League of American Dentists

### News and Notes

#### FUTURE WORK OF THE LEAGUE.

Although organized as a war emergency measure, conditions have so changed that there is a definite call for the League in a broader and more embracing sense. In fact, those who rightly read the signs of the times are united in the belief that the fullest usefulness of the organization is yet to come.

The identity of the League will, no doubt, be absorbed by the broader conception and we will be big enough to take up service for our profession throughout the allied nations. Should not the dentists of the United States and Canada, who have in reality gained greatly by the war, give every possible assistance to our brothers who have suffered loss of practice, home, money and even worse? Is there not a call to you through professional sympathy and the brotherhood of man to come forward in this, their hour of darkness and need and stretch forth a helping hand? Can you compute the wonderful influence thereby exerted toward establishing bonds that will live for all time?

Let us see the vision and act without delay. Let us keep alive the great principle upon which the League was founded and which has made it so great a power for good. Our National Dental Association needs such an organization to forward public service work in its name and to do such service for the welfare of the people as cannot be accomplished by the society whose activities are purely scientific in character. We must remember that the old order of things has been completely changed by conditions beyond our control, therefore, let us quickly adjust ourselves accordingly and meet these new conditions as we have so successfully met everything thus far.

Before this message shall have reached you, it is the hope of the officers of the League that this matter shall have crystallized and definite plans have been formed. We wish to call your attention to the excellent editorial in the December *Cosmos* which should be read by every member of the League. The outline of our future possibilities so well stated by him should receive careful consideration from the profession and any suggestions will be gladly received at League Headquarters.

The above is merely a suggestion of one of our future activities but there are others of local as well as of general significance to be considered which will make the League more useful than ever.

## OUR HOME SERVICE WORK.

Director-General Tracy has sent a letter to all State Directors to co-operate with the Home Service Section of the Red Cross in caring for the families of soldiers and sailors in need of dental treatment. All members of the League are requested to take up this splendid work and by communicating with your State Director you will be given necessary instructions. Let us all make a record that we will be proud of.

## SEND IN REPORTS.

All our members are earnestly requested to send in all reports of free dental service to the New York Headquarters. Hundreds of thousands of such operations have not been reported.

How many have you failed to report?

## LANTERN SLIDES.

Those holding one or more sets of the lantern slides sent out from Headquarters last winter, will kindly communicate with the President and state whether it is desired to retain them or return them.

## OUR COURSE OF INSTRUCTION.

Before this message reaches our members, a splendid course of instruction will have been given jointly by the Royal College of Dental Surgeons at Toronto, and the League.

The week of December 16th to 21st was given over to an intensive course at the Royal College, the instructors being, Major W. E. Cummer and Colonel Guy Hume, representing Canada; Dr. Le Roy Miner, Boston, and Dr. Arthur Smith, Chicago, representing the League and the profession of the United States. The class was limited to one hundred and was made up of a very representative number of our dentists. The fact that Canada now has a great amount of clinical material in the War Oral Surgery and prosthesis which was available for this course through the courtesy of Colonel W. H. Thompson, in charge of the Dental Reserve Corps of Canada, has made it the most notable and valuable course yet given for the civilian practitioner. Similar courses will be given in principal cities of the country as rapidly as arrangements can be made.

Inquiries directed to the President of the League, 131 Allen Street, Buffalo, N. Y., will receive prompt attention.

J. W. BEACH, *President*.

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SPECIAL POST-WAR COURSE

January 20th to 25th, 1919, inclusive.

The Preparedness League of American Dentists, co-operating with the Department of Advanced Courses in Dentistry of Columbia University, will give a post-graduate course of instruction in oral surgery,



physical diagnosis, anesthesia, fractures, splints and dental prosthesis, at the Columbia University Dental Infirmary, 35 West 39th Street, New York City, from Monday, January 20th, to Saturday, January 25th, inclusive.

The fee for the course is \$50. The class will be limited in the interest of efficient instruction.

For detailed information and enrollment, address, The Preparedness League, care Columbia University Dental Infirmary, 35 West 39th Street.

R. OTTOLENGUI, *Director of Publicity.*

## This I Resolve to Do

BY CHARLES F. CROUCH, D.D.S., ATLANTA, GA.

**I** A MAN, being of sound health and disposing mind, hereby set down these things that I have RESOLVED:

I will profit by the experience of others and will not wait to learn sense by my own experience. I will be teachable. From every human being I encounter I will learn something. I will decide by my intellect what my tastes ought to be and make myself like the right things. I will put away the weakling's argument that "I can't help my likes and dislikes."

I will keep clean in body and mind. I will not accept as a satisfactory standard what the majority of people are and do. I will allow no person nor institution to coerce my opinion; my judgment shall remain unterrified, unbribed, unsexed. In this I will not be truculent and offensive, but modest and open to conviction. I will not declare my belief in anything social or scientific that I do not clearly understand. I WILL LEARN TO DO SOME ONE KIND OF WORK EXPERTLY, AND MAKE MY LIVING BY THAT. I will take from the world only the fair equivalent of what I give it. I will never take revenge, will harbor no grudges and utterly eliminate any spirit of retaliation. Life is too short for destruction; all my efforts shall be constructive.

I will not engage in any business or sport that implies fraud, cruelty or injustice to any living thing. I will hurt no child, punish no man, wrong no woman. In everything I do I will strive to add a little to the sum of happiness and subtract a little from the sum of misery of all living creatures. I will constantly try to make myself agreeable to all persons with whom I come in contact. I know death is as natural as birth, and that no man knows his hour. I will not fret at this, nor dodge it, but so live that I am ready to go. I will believe that honesty is better than crookedness, truth is better than lies, cleanliness is better than dirt, loyalty is better than treachery, and love is better than hate or coldness. \* \* \* \* I will trust my life and my career to an unflinching reliance upon this creed.



# EDITORIAL

## MUCH TO BE THANKFUL FOR.

The past year has been one of the most notable in the world's history. The sacrifice of thousands of our best young men on the battle field, the sacrifices at home, and the nerve-racking strain that has been forced upon us, the magnificent support given by loyal Americans, and those of allied countries, the overthrow of autocracy by democracy, and the triumph of right over wrong, have brought us face to face with a new era in the world's progress. The benefits that must accrue from this sacrifice cannot be estimated at the present time, but we know that they shall be great.

But during this trying ordeal dentistry has not suffered. In fact it has been instrumental in bringing a recognition to dentistry that under ordinary conditions we probably should not have been able to obtain. The dental profession has been placed upon an independent basis. It no longer will be hampered by the medical profession or looked upon as mediocre by the people. Its worth has been recognized. The dental corps in the army has done a wonderful work for the soldiers. The army recognizes dentists as indispensable in making the soldiers fit for war and by restorations making the maimed and wounded fit for civil life again.

It also has been an educator to the public as to the possibilities and worth of advanced dentistry. A high standard has been set for us and it is the duty of every dentist to at least maintain that standard.

The army dental corps is coming home better dentists and broader men to serve the public, and civilian dentists who persist in following the old and beaten path in dentistry will find their usefulness waning. It is only through preparation for and adoption of the best and most progressive methods that dentists of the future can meet the greatest success and keep dentistry on the high plane it has attained.

Verily the past few years have been notable ones for dentistry and it has given freely, through the Preparedness League of American Dentists and otherwise, for the benefit of mankind.

It has made a record of which every dentist should be proud.

Now that the war is over and lasting peace is coming throughout the world, now that the possibilities of dentistry have been made clearer and that the great public is fast recognizing its real worth, now that dentists see the possibilities of their profession and are ready to grapple



and overcome the new problems that confront them, they have much to be thankful for.

Let us hope that as the New Year begins, earnest resolutions will be made by every dentist to do his part in the further upbuilding of dentistry.

We wish you all success and may the New Year be a happy and prosperous one to all our readers.

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### A DESERVED HONOR.

Dr. Homer C. Brown, Columbus, Ohio, was honored with a banquet by the Ohio State Dental Society, at its recent meeting, in appreciation of the service he rendered, as chairman of the Legislative Committee, National Dental Association, in securing the recognition of Dentistry in the U. S. Army and Navy.

It was a deserved honor and a fine acknowledgment of his accomplishment.

We say *his accomplishments*, but do not want to convey the idea that Dr. Brown did it all. He makes no such claims. In fact he is so modest that he makes no claims; so it falls to someone else to say a word in reference to the matter.

There are probably but few who know of the indefatigable work done by Dr. Brown to accomplish what he did. Could one see the voluminous correspondence required, the hundreds of telegrams and telephone messages sent, and realize how the Doctor virtually abandoned his practice, for a period, to give his entire time by day, and much by night, in the interests of the desired legislation, and the many trips he made to Washington and with whom he there conferred, one could better comprehend what a vital part Dr. Brown played in obtaining recognition for dentistry in the army and navy. There were others who gave valuable assistance, but Dr. Brown did the lion's share and should receive credit for it.

Few know of the opposition that came from some members of the dental profession, who tried their best to block the legislation and almost wholly through personal motives. One may be charitable toward such men, but most of us would find it difficult to respect them.

But notwithstanding this and the many other obstacles that were encountered, Dr. Brown persistently fought on, never turning back, determined to carry the issue to a finish.

Even to the closing hours of Congress, when hope of success seemed to be dying, he gallantly redoubled his efforts and in the last few minutes of the final session, Congress made a special order of the bill and passed it, giving dentistry the same standing as medicine in the army.

Thus Dr. Brown went "over the top" to victory but not alone; he carried the whole dental profession with him.

## THE RECENT MEETING OF THE OHIO STATE DENTAL SOCIETY.

The fifty-third annual meeting of the Ohio State Dental Society was held in Columbus Dec. 3, 4, 5, 1918. There was a large attendance and the lectures and essays were of the same high order that has characterized these meetings for years. President Z. N. Wright, of Dayton, gave a splendid address.

Dr. D. A. House, Dean of the Indiana Dental College, gave a fine presentation on Pulp Conservation in Crown and Bridge Work.

Dr. I. L. Furnas, Professor of Prosthetic Dentistry, Indiana Dental College, gave a splendid illustrated lecture on Dental Construction.

Dr. Frank M. Wadsworth, Prosthetic Specialist, Minneapolis, gave an instructive lecture on Partial Denture Articulation.

Dr. Percy R. Howe, Boston, Chief Assistant Professor Dental Research, Harvard University, gave an excellent illustrated lecture on Latest Observations in Root-Canal Work.

Dr. Weston A. Price, Cleveland, President Research Institute, National Dental Association, gave an instructive illustrated lecture on Variations in Individual Susceptibility to Disturbances from Oral Infections.

Dr. Russell W. Tench, New York, gave a splendid lecture clinic, fully illustrated, on Problems Involved in Full Denture Construction with Emphasis on Lower Impression Technic, the Bite and Relation of Lower Teeth to Adjacent Tissues.

The Miller Study Club of Cleveland gave talks and demonstrations on: (a) The Opening of Non-Vital Teeth and Roots; (b) The Method of Sterilization; (c) The Method of Root Filling.

The afternoon session, Wednesday, was conducted by ladies of the dental profession, an innovation for society meetings. This part of the program was arranged by Dr. Gillette Hayden, Columbus, who presided at the session. It was new, novel and noteworthy. The ladies were given an opportunity and they made good.

Their program comprised the following:

Dental Treatment for Children, (a) Operative, Dr. Flora N. Haag, Cleveland; (b) Prophylactic, Dr. Mabel B. Younger, Cleveland.

Dental Treatment for Children in Rochester Dental Infirmary, by Dr. Elberta S. Rosa, Rochester, N. Y.

The Need for Free Dental Treatment for Children, by Miss Lillie D. Atkinson, Superintendent Children's Hospital, Columbus.

Instructions in the Personal Care of Teeth—a motion picture film—prepared by Dr. Grace Rogers Spalding, Detroit.

Wednesday evening a complimentary dinner was given in honor of Dr. Homer C. Brown, Columbus, in appreciation of the service he rendered as chairman of the Legislative Committee National Dental Asso-



ciation, in securing the recognition of dentistry in the U. S. Army and Navy.

About two hundred were present at the banquet, Dr. L. L. Barber, Toledo, ex-president National Dental Association, acting as toastmaster. It was altogether a very enjoyable affair.

Dr. C. H. Schott, Cincinnati, gave an explanation and demonstration by means of lantern slides, of his method of swinging in a porcelain tooth by means of a backing to another tooth adjoining the space left by extraction of a tooth.

Dr. Stilwell, Cincinnati, gave an illustrated presentation on some phases of Orthodontia.

The clinics Thursday morning were interesting and instructive and the exhibits, as usual, attracted much attention.

Altogether it was a successful and enjoyable meeting.

All of the lectures and essays will be published in THE DENTAL SUMMARY, official organ, just as soon as they can be gotten in shape for the press.

Officers elected for the ensuing year are: President, W. H. Hayden, Youngstown; President-elect, C. W. Mills, Chillicothe; First Vice President, H. M. Semans, Columbus; Second Vice President, C. H. Schott, Cincinnati; Secretary, F. R. Chapman, Columbus; Treasurer, A. O. Ross, Columbus; Director for Three Years, A. J. Lewis; Delegates National Dental Association (two years), H. C. Brown, J. F. Stephan. E. C. Mills, F. R. Chapman; Alternates (two years), E. S. Braithwaite, Z. N. Wright, W. H. Hayden, G. D. Edgar.

Committee appointed by directors to revise Constitution and By-laws, and report in 1919: F. R. Chapman, H. C. Brown, Chas. Swope.

Committee to consider a memorial to the late Dr. J. R. Callahan, and given power to act, and receive funds: T. I. Way, W. A. Price, E. C. Mills, H. E. Germann, L. L. Barber and L. E. Custer.

The next meeting will be held in Columbus the first week in December, 1919.

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### THE PASSING OF THE DENTAL REVIEW.

With the December number *The Dental Review* suspended publication. We will miss its monthly visits, for it was one of the best dental journals published. It always was filled with instructive material ably edited by our talented and esteemed brother editor, Dr. C. N. Johnson, Chicago.

Yet, while the journal will lose its identity, its usefulness will continue, for it has been merged with *The National Dental Journal*, a magazine of which we all are proud.

We hope, however, that Editor Johnson will not retire from the literary field. We need the stimulating help of just such able men and hope that we frequently shall have the pleasure of reading his contributions to dental literature.

# SUGGESTIONS

CONDUCTED BY F. R. CHAPMAN, M.S., D.D.S., COLUMBUS, OHIO

(To Our Readers: Give others the benefit of your practical suggestions by sending a description of them to Dr. F. R. Chapman, Schultze Building, Columbus, Ohio.)

## Temporary Crowns

An easily and quickly applied porcelain crown for any of the front teeth in an emergency while completing the permanent crown, or while a root is under treatment, and saving the patient appearing toothless, is as follows:

Take an Ash's dowel or Davis crown, file up a hickory pin (its great toughness makes this easy; get a piece of hickory from a carriage builder), fit same into crown and root of tooth in usual way—make an easy fit into root as the hickory pin will swell. Apply a little carbolic acid to pin and press home. It will stand for some days. Patients should be advised to use with care.—*E. K. Satchell, Commonwealth Dental Review.*

## A Prescription—How to Kill a County Society

1. Don't come.
2. If you do come, come late.
3. If too wet or too dry, too hot or too cold, don't think of coming.
4. Kick if you are not appointed on a committee, and if you are appointed, never attend a meeting.
5. Don't have anything to say when you are called upon.
6. If you attend a meeting, find fault with the proceedings and work done by other members.
7. Hold back your dues, or don't pay them at all.
8. Never bring a friend whom you think might join the society.
9. Don't do anything more than you can possibly help to further the society's interests; then, when a few take off their coats and do things, howl "This society is run by a clique."

—*Journal, California State Dental Society.*

## Silicates and the Pulp

Silicate should not be brought close to the pulp, no matter how small a quantity. There may be just a small opening right down close to the pulp. Don't squeeze it down there. Silicates are no more irritating to vital tissue than other cements, but they are better conductors. There is no reason to believe the silicates contain any more arsenic than any of the other filling materials.

—*A. E. Webster, Dominion Dental Journal.*



# OHIO STATE SOCIETY

Through the generosity of the publishers of THE DENTAL SUMMARY, this space is made available for the use of the State Society and its Components in making announcements of general interest. The secretary of the State Society will use this medium as occasion requires and it is hoped that this will prove a valuable means of disseminating information to the Components and to the membership individually.

Many members have not yet paid their dues for 1919; the mailing list of THE DENTAL SUMMARY and of the *National Dental Journal* is made up from those who are in good standing, i. e. those whose dues are paid for the current year. If you have not paid yours, please do so at once and secure your journals regularly from the beginning of the year.

Those whose names appear below under the head of "Committees for 1919" will please accept the publication as official notification of their appointment by the President.

F. R. CHAPMAN, *Secretary*.

## Committees for 1919

### Ad Interim Committee: Board of Directors

W. H. HAYDEN	C. W. MILLS	F. R. CHAPMAN
A. O. ROSS	E. H. SHANNON	
C. H. SCHOTT	CHAS SWOPE	

### Publication

F. R. CHAPMAN, <i>Chairman</i>	JOHN MOLYNEAUX
L. P. BETHEL, <i>Editor</i>	PAUL CASSIDY
F. R. MANN	

### Program

W. H. WHITSLAR, <i>Chairman</i>	J. H. WIBLE
C. H. CLARK	

### Clinic

J. HERBERT HOOD, <i>Chairman</i>	L. E. PHELPS
C. H. SCHOTT	D. P. SNYDER
J. H. CHESROWN	

### Board of Censors

W. S. LOCKE, <i>Chairman</i>	T. H. WHITESIDE
J. J. WELKER	

### Infraction of Code of Ethics

J. F. STEPHAN, <i>Chairman</i>	A. F. LINSOTT
C. P. SWENY	

### Committee on Arrangements

HARRY COPE, <i>Chairman</i>	J. R. KELLY
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### Education, Industrial and Oral Hygiene

E. L. PETTIBONE, <i>Chairman</i>	E. S. BRAITHWAITE
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CARL E. SMITH	E. C. CHANDLER
W. G. HAMM	F. M. PURSELL
H. M. BREWER	

### Dental Legislation

CHAS. SWOPE, <i>Chairman</i>	H. M. SEMANS
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### Supervision of Components

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G. W. KENSON	J. M. CHASE
E. W. DOLE	G. D. EDGAR
	T. S. WARD

### Membership

G. H. WILLIAMSON, *Chairman*, and the chairman of the membership committee of each Component

### Military Affairs

F. M. CASTO, <i>Chairman</i>	M. G. PHILLIPS
GEO. L. MOORE	K. C. WILLS
A. S. BUTLER	

### History

C. I. KEELY, <i>Chairman</i>	V. H. MICHENER
F. W. SAGE	W. H. SEDGWICK
J. F. DOUGHERTY	

### Library

H. M. SEMANS, <i>Chairman</i>	C. S. STARKWEATHER
E. C. MILLS	H. R. C. WILSON
J. H. STUKEY	

## The Component Societies of the Ohio State Dental Society

(This list of Officers is compiled from information furnished by the Secretaries of the various Components; where incorrect it is due to lack of information relative to elections. Secretaries are requested to keep the list correct by notifying the secretary of the State Society or the Editor of THE DENTAL SUMMARY of the result of elections.)

**BUTLER COUNTY DENTAL SOCIETY**, meets 3d Friday, each month.—Pres., P. A. Krucker, Hamilton; V. Pres., E. E. Meisterhaus; Sec.-Treas., F. T. Craven, Hamilton.

**CENTRAL OHIO DENTAL SOCIETY**, meets 1st Wed., Feb., May and Oct.—Pres., C. B. Emery, Marion; V. Pres., O. M. Young and F. Burger; Rec. Sec., D. G. Welch; Cor. Sec., F. R. Mann, Marion; Treas., F. C. McGaughy.

**CINCINNATI DENTAL SOCIETY**, meets 3d Friday. Pres., S. J. Rauh, Cincinnati; V. Pres., R. W. Taylor; Rec. Sec., J. Wilson Foster; Cor. Sec., Paul Cassidy, 807 Livingston Bldg., Cincinnati; Treas., J. D. Gordon.

**CLEVELAND DENTAL SOCIETY**, meets 1st Monday. Pres. W. C. Stillson; V. Pres., Ira Saum; Rec. Sec., S. F. M. Hirsch, 5415 Euclid Ave., Cleveland; Treas., E. D. Phillips.

**COLUMBUS DENTAL SOCIETY**, meets last Tuesday. Pres. Oscar Miessse; V. Pres., D. P. Snyder; Sec., F. L. Gruber, 131 E. State St., Columbus; Treas., A. L. Ross.

**CORYDON PALMER DENTAL SOCIETY**, meets 2d Thursday, April and Oct.—Pres., G. H. Ormeroid, Warren; V. Pres., J. F. Steele and T. J. Evans; Rec. Sec., R. R. Bode; Cor. Sec., J. H. Chessrown, Wick Bldg., Youngstown; Treas. J. K. Nash.



**EASTERN OHIO DENTAL SOCIETY**, meets 1st Thursday, May and Oct.—Pres., H. D. Smith, Cadiz; V. Pres., C. S. Starkweather and L. B. Peterson; Rec. Sec., J. K. Hunter; Cor. Sec., J. G. Parr, Martins Ferry; Treas., W. J. Nesbitt.

**HANCOCK-SENECA COUNTIES DENTAL SOCIETY**, meets 2d Wednesday.—Pres., T. C. Schwartzbek, Findlay; V. Pres., A. G. Cole; Rec. Sec., E. V. Burns; Cor. Sec., A. E. Mann, Findlay; Treas., V. H. Michener.

**HOCKING VALLEY DENTAL SOCIETY**, meets 1st Monday.—No report as to officers.

**LORAIN COUNTY DENTAL SOCIETY**, meets 1st Tuesday, Feb., Apr., Sep. and Nov.—Pres., W. G. Schaeffer, Amherst; V. Pres., J. A. Minnich; Rec. Sec., P. E. Maddock; Cor. Sec., J. E. Betteredge, Elyria; Treas., J. E. Trombley.

**MAD RIVER VALLEY DENTAL SOCIETY**, meets 2d Monday, bi-monthly.—Pres., C. M. Evans, Springfield; V. Pres., ; Rec. Sec., C. A. Dawson; Cor. Sec., S. D. Hockman, Springfield; Treas., H. G. Butcher.

**MAUMEE VALLEY DENTAL SOCIETY**, meets 2d Tuesday, June and Oct.—Pres., A. B. Thompson, Metamora; V. Pres., N. A. Cunningham; Rec. Sec., O. S. Applegate; Cor. Sec., H. M. Jordan, Hicksville; Treas., J. A. Benner.

**MIAMI VALLEY DENTAL SOCIETY**, meets last Monday, Pres., J. W. Siegfried, Third St. Arcade, Dayton; V. Pres., H. C. Huffman; Rec. Sec., F. W. Cockerill; Cor. Sec., G. W. Riche, 622 N. Main St., Dayton; Treas., J. R. Arthur.

**MUSKINGUM-COSHOCTON-GUERNEY COUNTIES DENTAL SOCIETY**, meets 2d Thursday, Jan., May and Sept.—Pres., W. H. Dillon, Zanesville; V. Pres., P. F. Walker and A. W. Boyd; Rec. Sec., J. A. Honabarger; Cor. Sec., B. M. Beatty, Zanesville; Treas., H. J. Boyd.

**NORTH CENTRAL OHIO DENTAL SOCIETY**, meets 3d Wednesday, Jan. Apr., July and Oct.—Pres., C. D. Peck, Sandusky; V. Pres., R. E. Woelagel; Rec. Sec., P. A. Gould; Cor. Sec., A. G. Thatcher, Fremont; Treas., E. S. Braithwaite.

**NORTHEASTERN OHIO DENTAL SOCIETY**, meets 2d Monday.—Pres., N. H. Bishop, Andover; V. Pres., H. O. Frederick; Sec., O. T. Battles, Jefferson; Treas., O. T. Battles.

**NORTHWESTERN DENTAL SOCIETY**, meets 4th Wednesday.—Pres., A. N. Bruzilius, Lima; V. Pres., E. A. Bobo and G. L. Brunk; Sec., J. W. Dimond, Lima; Treas., J. K. Bannister.

**OHIO VALLEY DENTAL SOCIETY**, meets 2d Wednesday, Apr. and Oct.—Pres., M. D. Hartinger, Pomeroy; V. Pres., R. B. Church; Sec., C. S. Shumaker, Pomeroy; Treas., J. B. Hodge, Middleport.

**REHWINKEL DENTAL SOCIETY**, meets 3d Thursday, Pres., M. G. Phillips, Chillicothe; V. Pres., A. M. Bush and O. A. Thompson; Sec., F. D. Woollard, Washington C. H.; Treas., W. E. Robinson, Washington C. H.

**RICHLAND-ASHLAND COUNTIES DENTAL SOCIETY**, meets last Monday, Feb., June and Oct.—Pres., J. F. Winans, Shelby; V. Pres., B. W. Livingston; Rec. Sec., F. O. Eckstein; Cor. Sec., J. H. Bristor; Treas., F. H. Williams, Shelby.

**SOUTHEASTERN OHIO DENTAL SOCIETY**, no report.

**SOUTHERN OHIO DENTAL SOCIETY**, meets 3d Monday, May and Oct.—Pres., O. D. Donaldson, Portsmouth; V. Pres., F. C. Goodwin; Sec., E. C. Jackson, Portsmouth; Treas., E. O. Buchanan.

**STARK COUNTY DENTAL SOCIETY**, meets 3d Wednesday.—Pres., J. C. McConkey, Canton; V. Pres., C. O. Carr; Rec. Sec., E. H. Alden; Cor. Sec. and Treas., B. Hugo Bowman, Canton.

**SUMMIT COUNTY DENTAL SOCIETY**, meets 1st Friday. No report as to officers.

**TOLEDO DENTAL SOCIETY**, meets 3d Friday, Pres., W. J. Dierks, 1018 Spitzer Bldg., Toledo; V. Pres., R. K. Wood; Sec., L. C. Jackson, 2205 Ashland Ave., Toledo; Treas., C. H. Cox.

**W. D. MILLER DENTAL SOCIETY**, meets 2d Thursday, May and Oct.—Pres., E. V. Prior, Newark; V. Pres., W. S. Deeley; Rec. Sec., J. D. Ford; Cor. Sec., L. E. Davis, Granville; Treas., W. B. Grossman.

**WESTERN OHIO DENTAL SOCIETY**, meets 1st Thursday, Feb., May and Oct.—Pres., R. M. Kerr, Sidney; V. Pres., R. S. Van Hise, H. V. Steinmetz and J. F. Richeson; Sec-Treas., R. R. Kelsey, Greenville.

**WOOD COUNTY DENTAL SOCIETY**, meets 2d Wednesday.—Pres., F. W. Wemmer, North Baltimore; V. Pres., B. D. Roe; Sec., R. E. Milbourn, North Baltimore; Treas., T. M. Lea.



# SOCIETY ANNOUNCEMENTS

## American Institute of Dental Teachers

The next annual meeting of the American Institute of Dental Teachers will be held at Hotel Piedmont, Atlanta, Georgia, January 28, 29, and 30, 1919.

Papers on the teaching of war dentistry and an exhibit of war appliances will be the main features, and along with these will be the usual papers on teaching methods.

All persons interested are cordially invited.

ABRAM HOFFMAN, *Secretary*.

381 Linwood Avenue, Buffalo, N. Y.

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## Alumni Society of the Dewey School of Orthodontia

The Alumni Society of the Dewey School of Orthodontia will hold their next annual meeting in St. Louis, March 6, 7 and 8, 1919. The usual high standard of the meetings of this society will be maintained. All interested in Orthodontia are welcome. Address communications to DR. GEORGE F. BURKE, 741-43 David Whitney Bldg., Detroit, Mich.

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## Illinois State

The Fifty-fifth Annual Meeting of the Illinois State Dental Society will be held in Peoria, Illinois, May 13, 14, 15 and 16, 1919. The officers of the society are as follows: L. B. Torrence, President, Chester, Illinois; G. D. Sitherwood, Vice-President, Bloomington, Illinois; J. P. Luthringer, Secretary, 507 Jefferson Building, Peoria, Illinois; T. L. Grisamore, Treasurer, Chicago, Illinois; G. H. Henderson, Librarian, Chicago, Illinois.

Most sincerely yours,

J. P. LUTHRINGER, *Secretary*.

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## Minnesota State

The Minnesota State Dental Association will hold its next annual session at St. Paul, Minnesota, February 6, 7 and 8, 1919.

A program of unusual interest is being prepared and a cordial invitation is extended to all members of the National Dental Association, to attend this meeting. For information address,

MAX E. ERNST, *Secretary*.

1125 Lowry Bldg., Saint Paul, Minn

# NEWS and OPINIONS

CONDUCTED BY G. E. HARTER

## LACONIGRAMS

Yes, boys, the war is over, but settlement day is yet to come. The Jury of Creditors is about to sit over the remains of the dismembered, discredited and disreputable Central Powers. At this writing it generally is believed that the final verdict will be rendered about June 1. The question is not, as Germany would have it, how much can be saved out of the wreck for the Hun, but rather how much can he be made to pay without destroying his paying ability *in toto*. If the German sympathizers in this country could be induced to accept the defeat of the Fodderland with the same degree of resignation as do their friends at home, there might be less need for the eternal vigilance that is the price of liberty. Hun propaganda is still rife. The effort now being to bring about dissension among the Allies by arousing petty jealousies. It simply cannot be done. The war was won by unity of command and the settlement will be accomplished through unity of sentiment,—to make the world safe for Democracy, now and forever.

A brief study of the map on following page will show impressively what Germany and her misguided allies have "gained" in Central Europe by the war. "Mittel Europa" it truly is, but the Hun will have less than the Croat to do with its future determination and history. The self-determination, self-guidance of free peoples, along the lines of racial and social association will take the place of kaiser determination and despotic control. The map is supplied to THE DENTAL SUMMARY free of cost by the Italian-American News Service, Chicago.

It is, of course, only natural to expect many mistakes to be made in attempts at self-government by peoples only recently released from the galling oppression of "benevolent despotism." Anarchy in an acute form should surprise nobody. No doubt many people may be surprised to find that liberty has its price, and that the first installment of that price is lessened physical comfort. But, as every physical condition is the product of changes in feeling and thought, greatly improved conditions are sure to follow, provided the races and nations concerned have advanced suffi-

ciently to be willing to wait and "hustle" while they wait. Every child gets many a tumble while learning to walk; but it crawls up again and goes forward. One thing that should hearten these newly-freed peoples is that the result of all they do is now unquestionably their own, and need not be accounted for to the over-lords of Germany and Austria.

German war experts are trying to understand how it happened. According to all of their calculations defeat was impossible. Berhardi is credited with denying utterly the first Marne defeat. "Being impossible, it never happened." Germany had the men, the guns, the materials in enormous preponderance. Understanding force only, having no room in her twisted and stupid psychology for spiritual courage that knows no defeat, for mental ability that makes play of the physically impossible, her present bewilderment is not surprising. When she stood face to face with two millions of American troops, the splendid product of a century and a half of freedom, her doom was signed, sealed and delivered before the first Yankee bullet found the vitals of a Hun. France, imbued with the same spirit, might have been destroyed, but never could have been conquered; while England had only begun to fight.

History shows that while England wins few battles, she loses no wars. The last battle is the one that counts, and she always wins that one—barring Yorktown of course!

Every member of the O. S. D. S. should make it a point to read the Ohio State Department as soon as THE SUMMARY arrives. The department is conducted by Secretary Chapman and hereafter all official communications will be made through that department instead of by mail. Notice new committee appointments, officers of components and official matter in this number.

Students of the Royal College of Dental Surgeons, Toronto, have raised a fund of \$1500 to be devoted to dental science and research, and the amount has been converted in Victory bonds.



# THE DENTAL SUMMARY

**What Germany Has Lost**  
Map showing chaotic conditions with which the U. S. and our Allies have to deal.



## THE DENTAL SUMMARY

Readers of THE DENTAL SUMMARY will be glad to know that the series of articles on Fractures and Dislocations of the Jaws by Chalmers J. Lyons, D.D.S., that have been running in the magazine during the past year, completed in this number, is to appear in book form and be published by The Ransom & Randolph Co. Complete announcement will appear in the February number. As the edition will be limited, advance subscriptions are advised. The best possible prospectus is a hasty glance over the article in this issue.

### The New Surgery.

If there is any one branch of war surgery which stands out above its fellows, it is facial restoration.

This is the message brought back from the reconstruction hospitals in France by Dr. Truman W. Brophy, who spent three months in the Chapel hospital, where only facial and head wounds are cared for.

It is at this hospital that men are given new jaws, new noses, new eyes and parts of faces to convert them from horrors into men acceptable in the best of society. It is a gigantic work and a work of the highest kind of skill and the most careful surgery. Surgeons from all over the world are going to this hospital to learn the new art. They are to be the mouthpieces of the pioneers of facial restoration.

Dr. Brophy has completed his course and is now preparing to have all the leading college professors of surgery brought together to learn this new advance of science. This meeting and clinic promises to be a landmark in the surgical history of the country.

At the time the United States entered the war, Dr. Brophy tried to enlist but his

age prevented. The surgeon general of the army gave him credentials to the leading surgeons in Europe and with these he was able to obtain a place in the field.

"In this hospital," said Dr. Brophy, there are 500 patients constantly. They come and go and we can never accommodate all of them. The work is marvelous.

"Men come in with jaws completely shot away so it is possible to see their spinal column. In ten months or a year they leave new men, perfect to the eye, but put together with an assortment of the most ingenious contrivances ever invented. Over 85 per cent. of all the men admitted with these horrible wounds come out alive. The death rate is exceedingly low.

"In my judgment, the most needed work for a year after the war will be these artificial appliances necessary in facial restoration. Dental surgery and skilled dentists have never been more valuable. Surgery is entirely dependent upon the dentists. Without them nothing could be accomplished.

"Dental surgery will eventually be introduced into all medical colleges in the country and made a part of the medical course. It is one of the advances in medicine brought about by the war. There are hundreds of others."

British government is urging women to take up the study of dentistry.

### Something New and Important— Read It.

An idea has been rather slowly incubating in my alleged cosmos for several months, and finally has taken sufficiently definite shape to be handed on to you. I ask your opinion. By "you" and "your" I mean every man who does me the honor to read my stuff. I should like to hear from every one of you.

The idea is to collect the various papers and articles that are printed in THE DENTAL SUMMARY, group them broadly ("Plate work," "Inlays") by subjects and reprint them in pamphlet form, thereby preserving much valuable matter in the most easily accessible shape, and making it possible for members of the profession to keep in touch with the very latest word in the various departments in dentistry, and have its record always at hand.

The articles could be collected and reprinted, say, twice each year, January and July, although the date would be determined by the supply of suitable matter of sufficient and permanent importance.

No definite subscription price could be fixed in advance. Experience would be needed to determine that. It is my present opinion that the price would necessarily vary, depending upon the amount of matter, but might be expected to run from 25 to 50 cents per copy. Later a yearly rate may be fixed.

What I want now is your opinion of the scheme, and I ask that you cut out this panel, check "yes" or "no" and mail to me. Also, send along your renewal to THE DENTAL SUMMARY unless you already have done so.

Yes..... No.....

Signed .....

Address .....

The Ohio State Dental Board at its meeting November 19, revoked the certificate of N. A. Lindsay, a dentist who has been practicing in Dayton for 15 years, on the grounds of alleged gross immorality.

Walkerville and Windsor, Ont., are considering the establishment of a joint school clinic.





LIEUTENANT COMMANDER RICHARD GRADY, U. S. N.

First officer commissioned in the grade of dental surgeon in the United States Navy. Appointed in 1899 for duty at the Naval Academy, he has been longer in the government service than any member of the Dental Corps, Army or Navy. Dr. Grady is a Baltimorean and is a doctor of medicine as well as a dental surgeon.

## THE DENTAL SUMMARY

The college of dentistry of Iowa University has been listed in Class A. It is one of sixteen of the forty-seven such institutions so rated.

Every member of the Canadian army is to pass through the dental clinic on his way to discharge. Not a man is to be allowed to leave for his home until his teeth are in perfect order.

Restrictions on the use of platinum by dentists have been removed except on plate, which it is thought will also be relieved by February or March.

Dr. J. A. Kilmore, Mechanicsburg, Pa., is credited with having performed 1,156 free operations for drafted men in his community. Is this a record? I would like to hear from other readers of THE DENTAL SUMMARY.

### New York—Kings County.

Brooklyn, Nov. 15.—At a meeting of the Kings County Dental Society, held at the Masonic Temple in Lafayette avenue last night, Prof. Ellison Hillyer, of the New York City Dental College, delivered an address on the "Removable Type of Denture in Preference of Fixed Type to Maintain a Healthy Condition in the Mouth." A series of lantern slides was shown in illustration of the methods used in modern dentistry. Prof. James Kendall Burjess, L. J. Weinstein and B. Shapiro also addressed the meeting. The society admitted eight new members.

### Arkansas—Preparing for State Meeting.

Little Rock, Nov. 27.—An executive session of the State Dental Association was held Thursday evening at the Hotel Marion, with Dr. H. P. Hopkins, president, presiding. Plans were made for the annual convention which will be held at Pine Bluff May 21 and 22, 1919. Dentists of international reputation have engaged their services for the convention which, according to present plans, will be the largest ever held by the Arkansas association. The details of the program will be worked out in the near future.

### Illinois—Knox County.

Galesburg, Nov. 19.—The Knox County Dental Society held its annual election of officers Nov. 17, resulting as follows: President, J. F. Flynn; Vice-President, F. W. Wolf; Secretary and Treasurer, F. C. Lander; Librarian, M. W. Olson.

### A Four-dollar Standard Work for One Dollar.

Here's an opportunity. The Ransom & Randolph Co., as publishers of Dr. Eugene

S. Talbot's monumental work on Interstitial Gingivitis and Pyorrhea Alveolaris, still has on hand a few copies of the last edition which will be sent, postpaid, to the first fortunate dentists who remit One Dollar (\$1.00). The original price was \$4.00. As is well known, Dr. Talbot is authority on his subject, and his work is one that should be in the library of every dentist. First come, first served. If I were a dentist I should be sorry not to take advantage of such an offer.

### DR. RICHARD GRADY

LIEUT.-COMDR. U. S. N.

### Senior Dental Officer at Naval Academy Reaches the Highest Rank.

Dr. Richard Grady, senior dental officer at the U. S. Naval Academy since 1899, when he passed a competitive examination with distinction, has been advanced to lieutenant commander by Naval Act of July 1, 1918, the highest rank for a dental surgeon in the Dental Corps, and the Secretary of the Navy has sent him a letter to the effect that he will be regarded and recognized as holding that rank from that date.

Dr. Grady is a graduate of the Maryland State Normal School and has also the professional training of a doctor of medicine as well as a dental surgeon. He is duly registered as a physician and surgeon under the laws of Maryland and as a dental surgeon under the laws of the District of Columbia, where he has contributed an important part in the course of instruction to the student classes of medical and dental officers of the Navy at the Naval Medical School, Washington.

Dr. Grady is well known in Baltimore, where the imprint of his master hand has been stamped upon many a forward movement in educational, industrial and philanthropic work. He was the founder and first president of its local Association of Dental Surgeons, the organizer and first director of the Baltimore Polytechnic Institute, the founder and only president for 17 years of the Industrial Educational Association of Baltimore. Appointed by Governor Crothers, he was chairman of the commission to make inquiry and report to the legislature of Maryland respecting the subject of industrial education. He is the "father" of the national movement for the care of school children's teeth and recently inaugurated the course of public lectures in the Forsythe Dental Infirmary, Boston (the \$4,000,000 memorial dedicated to children), in an address on Opening the Doors of Dental Knowledge to the People.—*Baltimore American*.



## Ethical Advertising.

A month or two since I wrote something for this section concerning ethical advertising for ethical dentists. Of course I had in mind the advertising and popularizing of dentistry, not of any individual dentists. I have had many inquiries, to all of which the attached letter has been sent. It is printed here as a matter of general interest.

I may say that one of the most progressive dentists in the south has written his acknowledgment as follows:

"Dear Mr. Harter—Your recent communications are genuine inspirations to me. I am indeed very grateful to you, I assure you, for the ideas you have advanced. You have set forth very clearly just what I have wanted for some time, but did not know what I wanted until you told me."

\* \* \*

Here is my letter:

December 10, 1918.

Dear Doctor:

Answering yours of November 19th will say that my idea in writing as I did in my section of *The Dental Summary* for November was to interest a number of dentists in the abundance of advertising matter now obtainable.

For instance, the enclosed manuscript of a lecture which has been delivered by literally hundreds of dentists, besides myself, and before School Teachers' Associations, Mothers' Clubs, and the public generally.

If this were printed in pamphlet form it would make a comparatively non-expensive little book. My idea would be to have this pamphlet printed, bearing on the title page, "Compliments of ———, D.D.S.," and mail it to a selected list that you would like to have as patrons. I should have no other reference to myself than the imprint on the title page as suggested.

This for a beginning. A little later on, say two weeks, I should send out a letter to each of those to whom my booklet had been sent, calling their attention to the advantages of oral cleanliness and sanitation.

As you already know, probably 90 per cent. of all the deaths in this country are the direct result of disease that might have been prevented. Only deaths from the debility of old age should be called natural. At this time only 4 per cent. can be so classed, the remaining 6 per cent. being accidental. Since the beginning of modern sanitary methods the average of life has been increased from 30 to nearly 51 years.

As about 75 per cent. of the preventable diseases originate in the mouth, there is no reason why the average of life should not be very largely increased in the next few years. Based upon the maturity period, forty-seven

years, if man lived as long as the animals in proportion, the average of life would be at least 150 years, which it ought to be.

Of course you are in touch with the latest discoveries in dental science. You may not, however, know that many causes of insanity have been traced directly to bad mouth conditions and that a very large proportion of such have been restored to sanity by proper dental treatment.

I should begin by endeavoring to interest all parents in the teeth of their children. I think I should set aside one or two afternoons each week for the care of children's teeth. I am not at all certain that I would not state that for a time I would make examinations of children's mouths free of charge. This matter concerning children I should use in a second letter.

You may talk about dental service as much as you like without infringing upon the strictest ethical consciousness. In the case of letters your name would appear in signature only. You certainly would say nothing and want to say nothing that could in any way antagonize any other member of the profession.

If you like I will be quite willing to prepare two or three letters, numbering them in the order in which I should send them out. I believe that any dentist of good repute can follow this method and double his practice, and what is more important, double the practice of every other dentist in his community, within a single year. We must make the public *think* dentistry. That accomplished, the rest will take care of itself.

Yours very truly,

G. E. H.

## Iowa—Cedar Rapids District.

The annual meeting was held November 17; resulted in the election of the following officers: President, R. H. Moore, Cedar Rapids; Vice-President, M. W. Munger, West Branch; Treasurer, Harry Teege, Cedar Rapids; Secretary, L. W. Butterfield, Cedar Rapids; Representative to Executive Council, C. N. Booth, Cedar Rapids.

## Minnesota—State.

Minnesota State Dental Association will hold its annual meeting and clinics at the St. Paul Auditorium, Feb. 13, 14 and 15. Free use of the Auditorium has been granted by the city council.

Judge: "Why did you strike this man?"

Prisoner: "What would you do, judge, if you kept a grocery store and a man came in and asked if he could take a moving picture of your cheese?"

## THE DENTAL SUMMARY

### The American Soldier and His Teeth.

One thing about the American soldiers and sailors must strike English people when they see these gallant fighters, and that is the soundness and general whiteness of their teeth. It is all the more striking in that it is such a contrast to the teeth of the British people.

From childhood the Yank is taught to take care of his teeth. He has toothdrill thrice daily and visits his dentists at fixed intervals, say every three or four months. If by any chance a tooth does decay the rot is at once arrested by a filling. The result of all this is that our United States cousins, besides adding to their appearance, gain in health by having good, clean teeth, and when war came, very few men were turned down by the military authorities for having decayed teeth. So daily we see them, their faces tanned, smilingly exhibiting perfect sets of teeth. It is a dis-

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DEATHS

At Pittsburgh, Pa., November 9, Dr. Morgan Joseph Eckley Moore, aged 67.

At Morganfield, Ky., November 20, of influenza, Dr. Steven Morton, aged 35.

On the battlefield in France, November 1, while in active duty, Lieut. Dr. Howard M. Morrissey, aged 27. His home was at Kenosha, Wis., and he arrived in France July 19.

At Omaha, Neb., Nov. 25, Dr. Robert E. Lamoreaux, aged about 50.

At Nashville, Tenn., November 27, Dr. Robert E. Burns, aged 66.

At Newberry, Mich., December 5, of influenza, Dr. J. M. McVicar, of Lansing, formerly of North Branch.

At Beaver Falls, Pa., November 16, Dr. J. C. Hamilton, aged 73.

At New York City, October 26, Dr. Frederick L. Bogue.

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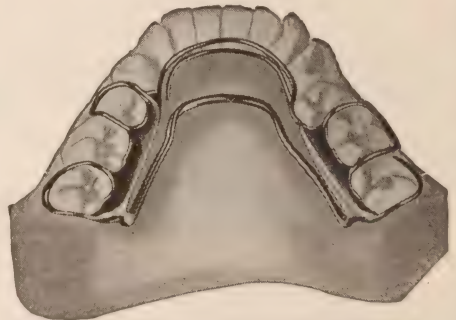
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# THE DENTAL SUMMARY

THE MAGAZINE THAT HELPS

Vol. XXXIX

February, 1919

No. 2

## MICROSCOPIC STUDIES OF DISEASED PERIDONTAL TISSUES\*

BY EDWARD H. HATTON, M.D., CHICAGO

**M**OST OF THE material on which these studies are based came from the peridental membrane clinic at the Northwestern University Dental School. In all of these, therefore, there are alterations of a high degree. At the same time, there are portions of each fragment that are only moderately changed. Zenker's fluid was used most often for fixation, and either celloidin or paraffin used for embedding. Paraffin was finally selected as the routine procedure because it was possible to get thinner sections and serial sections were more readily obtained. Hematoxylin and eosin, or methylene blue and eosin were the chief stains used. Occasionally methylene blue was used alone. The serial section procedure has more than paid for the trouble it entails, as it is only in this manner that the changes can be followed straight through the block, and reconstructions of the various parts achieved. An especially good illustration of this is in the transitions that take place in the epithelial layers.

These studies were begun as a routine procedure on all pieces of the gingivæ removed to give deep pockets in the subgingival space a better chance to be obliterated, with the idea of seeing just how much destruction of the essential structures had taken place. The studies are confined to a rather superficial portion of the soft tissues investing the teeth, and no pretense is made at this time to present them in any definite relationship to etiologic factors, or to suggest a classification. There seems to be a very definite and constant picture presented in each specimen, only the details varying either as to extent, or as to the circumstances of their origin, which are apparently the result of etiologic factors.

### ALTERATIONS IN THE EPITHELIUM

Of all the changes, none are more picturesque than those occurring in the epithelial layers clothing the gingivæ of these specimens. With

\*Read June 7, 1918, before the Section on Stomatology, (A. M. A.), of which THE DENTAL SUMMARY is the representative organ for the dental profession by special arrangement with *The Journal A. M. A.*



one exception, they are probably not of vital importance, but they deserve description for two reasons, *first*, because they are part of the picture, and *second*, because there is a strong possibility of their being confused with other conditions.

An early alteration is the tendency of the epithelial projections into the subepithelial layers to extend themselves and so exaggerate the length of the papillæ. A close examination of these projections will always reveal regions of infiltration along the basement membrane in the adjacent tissues, usually of the small round cell or lymphocyte type.



Fig. 11.—Elongated epithelial projections into the underlying tissues with accompanying round cell infiltration.

These projections are slender, and as the condition advances, they twist and turn so that sections cut at any angle always have rounded, oval, or cylindrical masses of epithelium which seem unattached to any of the surface epithelium. By studying these in serial sections, we find it always possible to join them to projecting epithelial pegs. Such deformities of the epithelium are frequently found on the surfaces lying outside of the subgingival space, but they are rarely of any greater extent. It is a chronic or low grade inflammatory process.

But the epithelium, which lines the so-called pus pockets and which formerly was adjacent to the teeth, is always the site of other very noteworthy alterations. As this trough widens and deepens there is a tendency for the epithelium to project itself further into the subepithelial tissues, and the forms of these projections become progressively more and more chaotic, the deeper they lie in the pocket. At the bottom, the surface continuity is no longer maintained in every case, but there are still masses of epithelial cells at the very bottom of every pocket examined thus far. These cords and projections are the seat of retro-

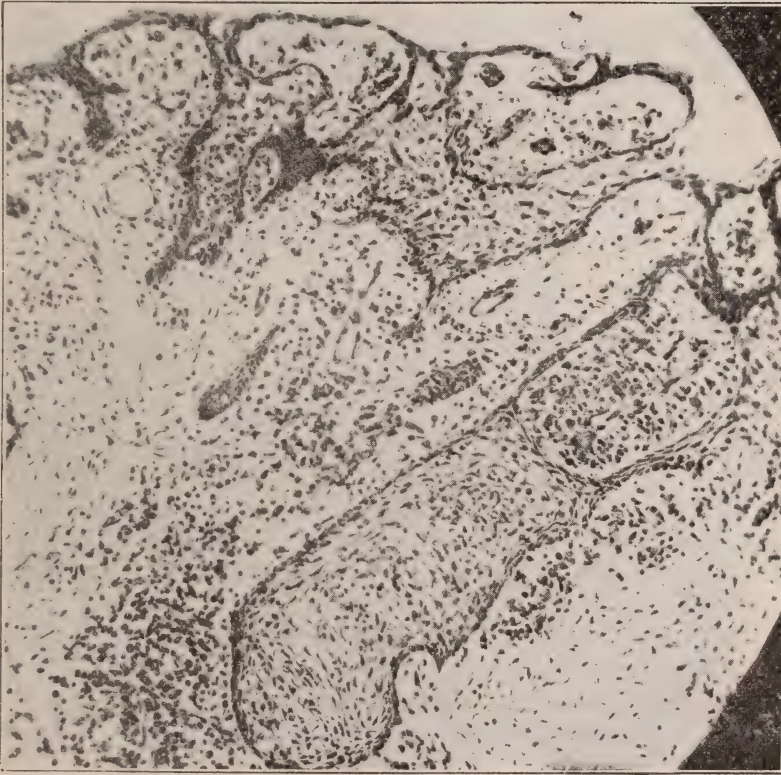


Fig. 2.—Epithelial deformities of the mucous membrane lying within the lining of the pus pocket.

grade, disintegrating changes that begin at their centers. It is assumed that the older epithelial cells are less resistant to the destructive agents than are the new cells. Fragmentation of their nuclei, necrosis, infiltration with polymorphonuclear leukocytes, and other inflammatory cells all take place in a regular sequence, so that as an end-result the cylindric, ovoid, or spherical bodies become thin shells whose walls are composed of very new epithelial cells, and whose contents are more or less purulent fluid or semisolid material.



From the character of the epithelial cells, that is, their age, and their rapid destruction, these regions must be very unstable. The cells are small, with small nuclei which take the blue nuclear stains very deeply. They resemble the cells ordinarily found in the basement membrane. It is easy to assume that these epithelial cells exhibit a negative chemotaxis to the products of this process in the gingival trough, and that they push down into the subepithelial layers stressed by this force. Small blood vessels are found in these regions in great numbers. They are frequently packed with polymorphonuclear leukocytes, and nearly always contain one or several of these cells. Red cells are often found in considerable numbers outside the blood vessels, even to the extent of small hemorrhages. These may be the result of surgical trauma. The cells are often separated as though by fluid. Possibly this is caused by an edema or it may be simply an artefact. All these products are being constantly extended into the subgingival space, which, as a result, becomes a pus pocket. To one not familiar with this type of inflammatory tissue, some of these malformations are strongly suggestive of malignancy. There is apparently no relation at all between the two conditions.

#### INFILTRATIONS

The subepithelial regions as far as studied are characterized by inflammatory infiltrations which are invariably perivascular. Their distribution is most conveniently seen in bucco-lingual sections parallel to the long axis of the teeth. If the capillaries that supply the papillæ just beneath the deformed and distorted epithelium are traced down into the deeper layers and their course followed even into the larger branches, just these and no others are the site of these infiltrations. In some sections, this border between healthy and infiltrated regions is most abrupt.

The infiltrating cells are most often of the small round cell type. There are large numbers of cells called plasma cells, with deeply stained cytoplasm and eccentrically placed nuclei. Occasional eosinophil cells are found, and polymorphonuclear leukocytes are not uncommon, especially in parts adjacent to degenerated epithelial projections. Unattached endothelial cells are frequently seen.

The vascular supply is very rich. The walls of the small veins and capillaries are often thickened, and many of these vessels are filled with polymorphonuclear leukocytes to the exclusion of the red cells.

The fibers of the gingivæ and of the peridental membrane seem to be very susceptible to the destructive action of these forces. One of the first tendencies is for the fibers to lose their affinity for the stains and either stain more faintly or react with the nuclear stains. Little by little, the fibers are replaced by the inflammatory infiltration. There are regions about the size of these epithelial ovoids which no longer

have any cellular structure, and are occupied by a homogeneous staining substance. This seems to be some product of degeneration, either of dead epithelial cells or from some other necrotic process.

If a buccolingual section is carefully studied as to its form and the relations of its various parts, it will be found that a large portion of the free gingiva has disappeared. There is nearly always a mass of necrotic material lying on the epithelium at this point or just within the inner lip of the pocket. If the surface of the adjacent tooth is approximated, and the curve of the outer surface of the gingiva projected until it inter-

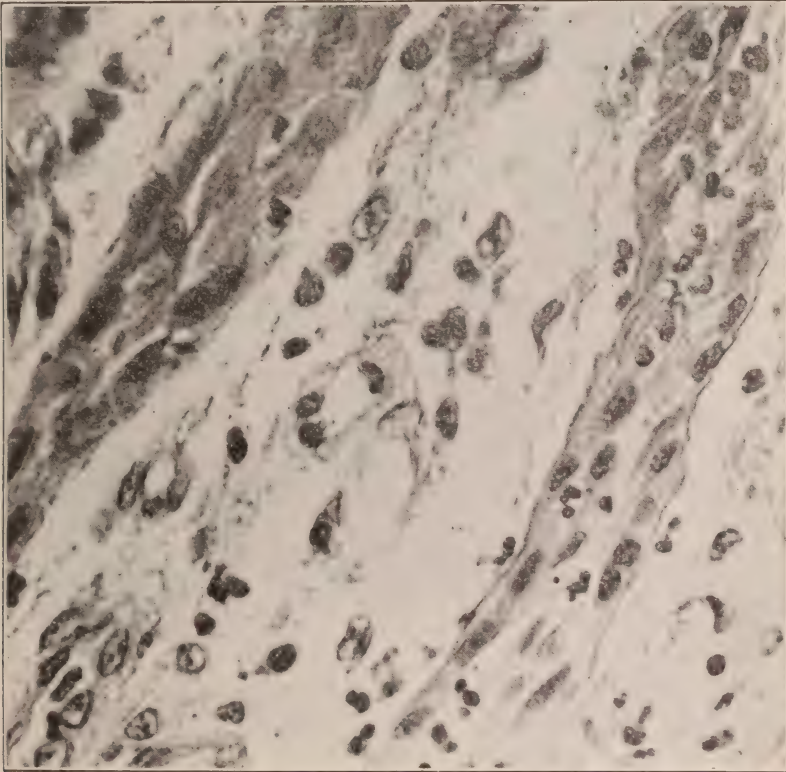


Fig. 3.—Polymorphonuclear leukocytes in the epithelial projections and the intervening spaces.

sects with the buccal surface of its tooth, the amount of destruction may be very accurately estimated. There is a very marked tendency of the new crest to lie near a straight line drawn from the bottom of the pocket or the subgingival space to the nearest unaltered epithelium. If a line is drawn from the last point parallel to the distribution of the ascending capillaries down to the alveolar process, this line will mark the division between the healthy periodontal membrane and the region in which there is inflammatory infiltration and destruction of the fibers of it. In the



latter region, the infiltration is usually so marked as to assure the nearly complete destruction of the fibers, and in these advanced cases which are here described, there is no tendency to any reconstruction of them. As far as these tissues are concerned, when once the fibers are destroyed, they do not seem to be regenerated.

#### BACTERIA IN THE TISSUES

Bacteria have been demonstrated in various tissues by the newer methods of bacteriology, as well as by the more standard staining pro-

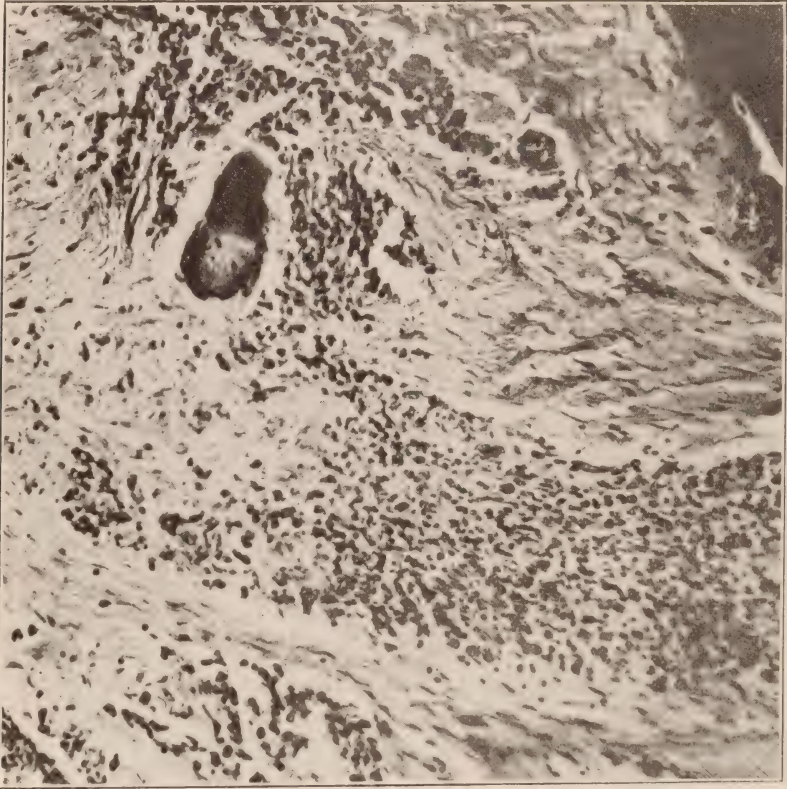


Fig. 4.—Perivascular round cell infiltration of the gingivæ with destruction of the fibers of the periodontal membrane.

cesses. Tubercle bacilli are often found in the tissues, as well as typhoid, plague, and the spirochete of syphilis in the lesions which they respectively produce.

More recently cocci have been demonstrated in the tissues during the course of various diseases, such as poliomyelitis and experimental scurvy. Curtis<sup>1</sup> found cocci in uteri removed for various causes, and Rosenow<sup>2</sup> has described an infected root apex about which there was a

<sup>1</sup>Curtis, A. H.; *Bacteria in the Uterus*, Surg., Gynec. and Obst., 1918, 26, 178.

<sup>2</sup>Rosenow, E. C.; *Journal*, National Dental Association, 1918, 5, 118.

small region of granulation tissue, in which he was able to demonstrate a latent group of bacteria, which were stimulated to growth by incubation in bouillon for ten hours. Then the tissue was fixed, sectioned and stained.

In spite of the fact that recent work has shown that bacteria invade the blood stream comparatively frequently in many conditions, yet it seems that there must be an easier way for bacteria to reach the peridental membrane and the apical region of the teeth, or even the pulp cavity, than by the blood stream. All these results, as well as the peculiar pathology of the regions about the vessels, stimulated a belief that bacteria could be found in these diseased gingivæ.

Cultural methods were tried at first, but the pieces of tissue were so small that, by the time the external surfaces were sterilized by heat or hot oil, there was always a suspicion that the bacteria inside had been destroyed at the same time, that is, granting that they were there, or on the other hand, that contamination from the outside had not been ruled out.

Thus far, bacteria have not been found in any large number of cases, and no attempt has been made to arrive at any conclusions as to the frequency with which they are found. The forms resemble those of the streptococci that have been found quite constantly in the pus pockets. For the great part, they lie about the vessels which are surrounded by the cell infiltrations already described, and are more frequently disclosed near the bottom of the pocket. They may be in small masses, or in groups of two, four, six or eight.

Their relation to the surrounding pathologic changes, or their ability to penetrate farther into the peridental membrane or down to the apical region, is conjecture and a subject for further investigation.

There is a very striking analogy between the location and the distribution of the lesions described in the foregoing and the distribution of the dental lymphatics, as demonstrated by Noyes<sup>3</sup> and Schweitzer<sup>4</sup>. It is known that the lymphatic vessels play an important part in the distribution of infection elsewhere in the body. With their demonstration in the peridental membrane as well as the pulp in a way that seems beyond equivocation, their importance from the standpoint of the part they play in the pathology of the tissues can hardly be overestimated. The distribution of these pathologic changes here described seems compatible only with the notion that they exactly parallel the distribution of the lymphatics in the same region. It answers the question why the line of progress is always downward and inward, why with a broad shelf-like erosion, as occurs under a salivary calculus, there is a broad band of

<sup>3</sup>Noyes, F. B., and Dewey, Kaethe W.; *The Lymphatics of the Dental Region, The Journal A. M. A.*, Oct. 12, 1918, p. 1179.

<sup>4</sup>Schweitzer, G.; *Ueber die Lymph Gefaesse des Zahnfleisches und der Zaehne beim Menschen und bei Saeugethieren, Arch. f. Mikr. Anat.*, Berne, 1909, 74, 927.



infiltration, and why there is such an exact and abrupt division between the regions of infiltration and those free and uninvolved.

31 West Lake Street.

#### DISCUSSION

DR. ARTHUR D. BLACK, Chicago: Those who have studied the work which Dr. Noyes has reported to this section during the past two years will recognize the important relationship between his studies of the normal tissues, demonstrating the lymphatic channels in the peridental membrane, and Dr. Hatton's studies of the pathologic changes in this membrane. They corroborate each other, and both fit in with the most careful clinical observations of the progress of these infections. I would like to emphasize the difference, observed clinically in the progressive destruction of tissue in the case of the pus pocket, beginning in the gingival line of the tooth, and of the chronic alveolar abscess, beginning at the apex of the root. In the one beginning at the gingival line we have noted the tendency to progress most rapidly toward the apex, forming a deep, narrow pocket, while in the alveolar abscess there has not been the same tendency to progress crownwise. Dr. G. V. Black referred to this as early as 1886, and in his recent book on Dental Pathology there is a paragraph calling attention to the fact that we must have a proper explanation of the difference in the progress of these two types of infection involving the same tissue. If the route of travel is by perivascular lymphatics, the clinical observations in both conditions are explained, because the flow of lymph is from the gingivæ toward the apex, which would promote the progress of infection toward the apex in the case beginning as gingivitis and retard a similar progress crownwise in the case of the alveolar abscess.

The study of the movements of the epithelium is very interesting, especially the apparent effort of the epithelium to line the pockets about the sides of the roots. It is possible that in a small percentage of cases pockets along the sides of the roots have been lined by epithelium, and the individuals have thereby been protected from systemic infection. In treating these cases by cutting away the tissues which overlies the surface of the roots, there occurs a rapid growth of epithelium over the cut surface down to the line of attachment of the root. All of the studies of the tissue changes support this plan of treatment as being the most practical method of eliminating the menace to the general health.

DR. EUGENE S. TALBOT, Chicago: The most interesting part of this paper is the migration of the epithelial cells. These cells will migrate, almost anywhere when they get started. The question naturally arises, How far will they extend into other tissues and how far will they extend down through the peridental membrane? My research of these subjects leads me to believe that very little work has been done on the migration of epithelial cells. I think Dr. Hatton will agree with me that it will be impossible for these cells to migrate through bony tissue. All his pictures showed that they are located in soft tissues, so we will have to set down as a fixed point that they cannot migrate through bony tissue.

The next question to settle is, How far will these epithelial cells migrate from the surface down into the soft tissues? My studies showed conclusively that the cells of the external epithelium do extend into the fibrous sac or peridental membrane, or far down to the ends of the roots of the teeth, before the bone begins to form. We have all seen epithelial cells in the peridental membrane at the root of the tooth. Another point that I did settle the other day conclusively and which has been attacked by eminent men is that these epithelial cells migrate into the fibrous sac from the external epithelium. Dr. Hatton and Dr. Black both mentioned the fact in regard to the lymphatics that these cells have a tendency to migrate downward. There is no question about that. In the last four or five years I have been doing extensive operations on dogs by using all the drugs that we use on our patients. You would be surprised to see the effects of these

drugs and the absorption that has taken place by the use of a simple alkaline mouth wash by producing an irritation through the end of the root into these tissues, and I have many photographs which show this absorption and then the inflammation and abscess formation between the roots of the molars and also abscesses along the margin of the gum tissue. These experiments showed conclusively that by forcing an irritant through the end of the root an inflammation is set up and an abscess forms, not at the end of the root, but higher up between the roots of the molars and the gum margin.

DR. V. H. MOON, Indianapolis: One or two points of Dr. Hatton's presentation coincide with our experience in the pathology of other tissues; namely, the thinning out and disappearance of fibrous tissue in connection with an acute inflammatory reaction. This phenomenon is found elsewhere, and it may be explained as being due to a proteolytic ferment which is produced by the inflammatory cells, which have the function or capacity for absorbing fibrous tissue. So, in pus formation, where there is actual destruction of tissue, the liquefaction of the tissue is due, in part, to the proteolytic ferment produced by the cells which infiltrate that region.

As to the migration of epithelial cells, we have learned in other lines of pathology to be conservative in our statements for the reason that the wandering cells of the body, which are found in almost every tissue, so closely simulate epithelial cells in their characteristics that it is difficult to decide whether we are looking at an epithelial cell or at one of these wandering cells. These wandering cells are very common in regions which are subject to chronic infection.

Usually when the fibrous tissue is disappearing as a result of inflammatory reaction, hyaline degeneration occurs, the tissue taking a homogeneous, rather deep pink stain. I have not noticed change of staining to a basic character except occasionally in tuberculosis and syphilis. After the fusing together and hyaline degeneration of the fibers there is a subsequent liquefaction, and the liquefied tissue and inflammatory cells are carried off by the lymphatics.

I did not wish to be misunderstood as referring to the true proliferation of epithelium to cover a granulating wound surface, which is a regular occurrence on all surfaces that are covered by epithelium. What I referred to was the migration through the tissues of epithelial cells. Epithelial cells will grow very readily from an adjacent epithelial surface. It can be demonstrated in connective tissue cultures in the test tube that as the fibrous tissue proliferates and grows the epithelial cells which are in culture with it will grow and spread along the surface of those fibrous tissue cells. The same thing occurs in the healing of wounds or in any wounds or granulating surface adjacent to the epithelial covering.

DR. FREDERICK B. MOOREHEAD, Chicago: The differentiation between epithelial cells and epithelioid cells, as Dr. Moon has just suggested, is very important. The proliferation of epithelial cells in continuity, as seen in skin grafting and in the repair of surface wounds, is well illustrated in clinical surgery. I see no reason why the surface epithelium should not grow into the pockets, even to a considerable depth, in the cases Dr. Hatton cited. I believe it will be seen that it is more a question of proliferation by continuity than by cell migration that these spaces are lined by epithelium. In pyorrhea pockets, so called, where the infection has been controlled, the conditions of heat and moisture are present and there is also enough mechanical irritation to stimulate the proliferation of epithelial cells. Moreover, there is always a tendency of epithelial cells to repair and cover defects.

DR. EDWARD H. HATTON, Chicago: The possibility of the migration of epithelial cells has been explained by the other speakers. I believe that in all my specimens those projections are true epithelial cells, because I think that in every case, by means of serial paraffin sections, I am able to demonstrate that they are. I cannot say that I have found any true epithelial migration, except the growth into fluids.



## DENTAL OPERATIONS FOR CHILDREN\*

BY FLORA N. HAAG, D.D.S., CLEVELAND, OHIO

Dr. Gillette Hayden, presiding, introduced the essayists of the session, as follows:

"We are offering for your consideration, this afternoon, a program to which ladies of the profession only, have contributed. I feel assured that we, one and all, feel a just pride in the achievements of the various organizations represented by these essayists, in the work to which these ladies have severally devoted themselves, a work which refers especially and particularly to children. It has been impressed upon us that the peculiar service we render to parents and to our profession, in following this line of educational work, is of sufficient importance to justify the assumption that you will be interested in this presentation. There has been evinced in all this a spirit of unselfish devotion on the part of these ladies, most commendable, deserving of the highest praise."

A NOTED SCIENTIST says: "An analysis of the reasons for preserving the teeth gives first importance to their preservation that they may perform their function as a part of the human organism and play their first part in that sum total of activities which go to make up the physical life of the human animal. It is one of the dictums of physiology that any part of the body which ceases to perform its functions atrophies, or the character of its tissues degenerates, and in course of time is incapable of performing its part in the work of the body."

A study of the evolution of the teeth shows that the greater part of the process is accomplished before birth, the normal child being born with forty-four tooth buds in its jaws, while between the years of four and five it has twenty temporary teeth in the arches and thirty-two more in process of development, imbedded in the bony tissues—a total of fifty-two, all in motion at one time in those small jaws. Dr. Head, in his book on Modern Dentistry, speaks of the wonderful engineering feat of dentition. He says: "When it is appreciated that before the child is seven years old, all of the full-sized crowns of the permanent teeth, the wisdom teeth excepted, are packed away in the small face, and that without disturbing mastication or nutrition the roots of the first teeth must be absorbed, and the replacing large second teeth must emerge into graceful lines from their position as the face develops, the wonder of it is beyond comprehension. Such a magnificent engineering feat is worthy of the Master Mind."

This is the age of prevention in dentistry as well as in medicine, and he who fully realizes this important fact must, of necessity, adopt as his watchword that important term *Preservation*, with all that the word implies. Restorative procedures always will be necessary, but their importance gradually will decrease with the advance of scientific knowledge in our profession.

\*One of a symposium of papers read by women dentists at the Ohio State Dental Society, Dec., 1918.

There is no work which is of greater importance or attended with greater difficulties than that incident to the performance of dental operations upon the deciduous teeth; and there is no work connected with our profession that, in the long run, gives greater results. This work is more troublesome and requires more patience and skill than that done on the permanent teeth; yet the self-satisfaction of work well done at this opportune time more than pays. Many dentists do not care to treat children; they look upon this phase of their profession as temporizing. To be able to know how to perform successful operations that will preserve the temporary teeth until the time that they should be lost, and which will prevent future ills and give to the child a healthy oral cavity, that he may go through life with the number of teeth that nature intended that he should have, is by no means a menial service.

When our draftees came before the examining boards, many failed to pass and were rejected because of bad teeth or of missing teeth. Many young men who were anxious to defend our flag in the world war hastened to their dentists to have their defects made good, and were afterwards accepted and made a part of Uncle Sam's army. We American dentists have reason to be proud of the remarks of the English and French regarding the clean, white teeth of our boys in khaki "Over There."

#### NECESSARY QUALIFICATIONS OF A DENTIST FOR THE SUCCESSFUL MANAGEMENT OF CHILDREN

The necessary qualifications for the dentist who aspires to practice among children must be of a high order. He must possess unusual professional attainments, a knowledge of human nature, extreme kindness, patience, perseverance, tact, sympathy, firmness, and a knowledge of the proper treatment to be given. Painful operations should be avoided if possible, certainly upon the first visit. Perfect operations are not to be gained at the expense of serious mental impressions made on the child. When a child enters a dental office for the first time and is introduced to the dentist, it is much the same as when two pugilists enter the ring. There is an appraisal on the part of both. The dentist is curious to know just how the little patient is going to receive him. He notes each movement and word; he tries to read the thoughts of the little one that he may know the best way in which to obtain the control that will enable him to do that which is best for the child. The child, a bundle of impulses, quick to think, already frightened at the thought of pain, looks the monster over and wonders where he is going to strike first. Even a pleasant greeting and friendly conversation will not always dispel the attitude of wonder and excited expectation. The same method of procedure cannot be applied in every case, but as a rule, children should be treated like little men and women. It always is



best, if possible, to avoid suspicion on the part of the child that the dentist suspects he is afraid. It is never wise to conceal instruments, but rather an explanation of their use should be made, if the child is curious to know. Deception of any kind never should be practiced, for, once having been deceived, the child's co-operation never will be re-established and its confidence in humanity will be lessened.

Parents often tell the child that certain operations will not hurt. The dentist who is courageous and has the welfare of the little patient at heart, immediately will correct this statement, if the operation in hand is of such a nature that it cannot be done without some pain. A personal interest in the child should be manifested, and his powers of resistance never should be overtaxed.

#### CARE OF THE ORAL CAVITY IN RELATION TO THE ERUPTION AND LIFE OF THE DECIDUOUS TEETH

So important is the care of the oral cavity before the eruption of the deciduous teeth and during dentition, that it is necessary to employ some method by which parents may be taught the proper care in providing for a normal dentition. Many parents are ignorant of the evils of thumb-sucking and pacifiers, and even encourage them. It is not only after, but also preceding, the eruption of the temporary teeth that mouth-breathing and thumb-sucking should be prevented. Place the thumb between the arches and it readily may be seen that as a result of this habit the upper arch will be forced outward, while the lower will be carried inward, producing an abnormal relationship of both arches.

Hygiene of the oral cavity should begin at birth. The nurse by means of a sterile napkin wrapped around the index finger, may cleanse the mouth by the use of distilled water or a lotion of boracic acid. Daily hygiene of the mouth not only keeps the tissues healthy, but it soon accustoms the child to expect it and helps to form the habit. As soon as the child is old enough, it may be given a fine bristle brush or camel's hair brush and taught how to use it. It also should be given thorough instruction as to why its mouth should be kept clean.

#### THE PERIOD OF DENTITION

The three crucial periods in the life history of an individual are the periods of dentition, puberty, and the menopause, and of these three I do not hesitate to say that dentition is the one fraught with the greatest danger and requiring the most painstaking care on the part of both physician and patient. The period of dentition usually is one of great annoyance to the child. There is a diversity of opinion among physicians in regard to the many ills that usually arise during the teething period and the advisability of lancing has been questioned. We do know that during the first and second summers improper feeding is the

cause of various diseases attributed to teething. It is known also, that a twenty-months-old child slept for hours after a gum over a molar tooth was lanced; also, a child with a temperature of 103 degrees became normal in a few hours after the performance of a similar operation. The pain, however, is not caused altogether by the gum overlying the tooth; but when the organ is bound down by the dense gum above it, the growth of the root presses upon the formative organ below often causing disturbances of an alarming character.

The fact of the matter is that pain and other pathological disturbances arising from tooth eruption originate from four different sources, viz., the overlying gum, the tissues at the end of the developing root, the tooth pulp and the peridental membrane.

In lancing the gum, the more successful operations have been where the overlying tissues have been dissected away from that portion of the crown which is being held in bondage. A simple straight incision across the occlusal surface or incisal edge does not suffice, as the gum tissue heals rapidly and soon will repair itself and the desired results will not have been obtained.

#### REASONS FOR PRESERVING THE TEMPORARY TEETH

There are many important reasons for preserving the temporary teeth, prominent among which are: avoidance of pain, preventing bad habits of mastication and shaping a symmetrical jaw. The voluntary disuse of the teeth frequently is a direct result of caries, which renders the chewing of food difficult and painful, with the result that food is swallowed without proper mastication and the habit of bolting the food is formed and carried through life causing many systemic derangements. Many practitioners appreciate the value of preserving the temporary teeth from the masticatory and succedaneous view points; but they do not realize all of the important functions which the deciduous teeth perform, and will extract a decayed deciduous tooth without compunction, failing to realize that the child, nevertheless, is more or less injured for life. The preservation of the temporary teeth assists in the growth and development of the jaw to the extent that it permits the proper eruption and alignment of the permanent teeth.

Having had thirteen years' practice, seven of which were in a college where many children were treated daily, I did not fully realize the injury resulting from a lost deciduous tooth if it had served part or most of its time until I had been associated with Dr. F. M. Casto, orthodontist. The loss of a temporary tooth by decay, inflammation of the pulp or abscess, not only causes much pain and suffering, not only interferes with the nervous system, not only prevents proper mastication, not only disturbs the digestive function at a time when it is so important to the child's growth, not only interferes with the maintenance of



proper hygienic surroundings, but it also lessens the size of the already small arch, instead of assisting in its development and growth.

The maintenance of the normal mesio-distal width is also of great importance. The loss of the temporary molars will allow the first permanent molars to move forward and take up the space that later should be occupied by the bicuspid. The normal eruption of the permanent denture depends largely upon the first permanent molar erupting in its proper position. If the pulp of a deciduous tooth is diseased, there will be an interference with the absorption of the root, thereby disturbing the eruption of the permanent tooth.

#### TECHNICAL PROCEDURES

The most difficult operations upon the deciduous teeth are the devitalization of pulps, the filling of root canals, and the treatment of abscesses. The medicaments to be used for the devitalization of the pulp will depend upon the amount of absorption of the root. There is a marked difference in the time of root absorption in different individuals and in the individual teeth of the same person; but the average time of beginning absorption of the root of the first deciduous molar is seven years of age, while that of the second usually is eight, and the cuspid, nine. Up until this time any method of devitalization used in the permanent may be used with safety in the temporary teeth. If any absorption of the root has begun, arsenic trioxid should not be used. If there is any doubt in the mind of the operator as to the conditions present an X-ray should be made of the root. Novocain hydrochlorid pressure anesthesia is used by many operators with success, although some dentists are of the opinion that should the root be partially absorbed, the anesthetic might be carried into the soft tissues and dangerous results arise. However, a very small amount is necessary to anesthetize the pulp in a deciduous tooth and when used with the proper caution, evil effects never have been noted in the writer's practice. Phenol under pressure frequently is an efficient and safe method for pulp extirpation, since there is no systemic effect and it limits its own action. This method has brought marked results. Infiltration also may be used with good results in some cases, while conductive anesthesia is contraindicated.

In the filling of the root canals of deciduous teeth the same care should be observed as in filling permanent roots. However, it is best to fill temporary roots, and especially those which are partially absorbed, with a filling material which will absorb with the roots.

Dr. W. H. O. McGehee, in his manuscript of a text book on Operative Dentistry soon to be issued, mentions the following materials which may be used for this purpose, viz.:

(a) Salol, liquified by heat and pumped into the canals with a smooth broach;

- (b) Salol and aristol, equal parts, used in the same manner;
- (c) Salol, aristol and paraffin, same method;
- (d) Paraffin, melted and pumped into the canals;
- (e) Prinz' root-canal filling;
- (f) Balsamo del deserto;
- (g) Zinc oxid or calcium oxid made into a paste with oil of cloves, eugenol or formocresol;
- (h) Euca-percha (Buckley.)

In regard to the treatment of alveolar abscess in deciduous teeth he also gives the following:

"The treatment for alveolar abscess in temporary teeth is practically the same as for permanent teeth, as far as conditions permit. If the tooth is very sore, the passage of a broach into the canals, after flushing out the cavity, often will afford exit for malodorous gases and other products of putrefactive decomposition and relieve the acute symptoms. Lancing of the gum is practiced under the same circumstances as indicated for permanent teeth, and often affords quick relief from pain. As soon as conditions will allow, the chamber and canals may be opened and a modified formocresol treatment applied. These cases usually respond much more readily to treatment than permanent teeth."

Dr. Black mentions the fact that he has observed a number of cases, one in his own family, where an abscess occurred at the end of a root of a temporary molar before the enamel of the crown of the bicuspid had been completed, and, in that case, the pus had broken through into the enamel organ and destroyed it, or a part of it, so that the enamel for the crown of the bicuspid never was completed. Then it came through as an imperfectly-enameled tooth. He adds that a severe alveolar abscess that may occur early at the root of a deciduous molar, may be relieved by discharge of pus or the removal of the offending tooth and be forgotten. Then the bicuspid takes its place, with imperfect enamel and no one knows what has occurred. A number of cases had occurred in his practice in which necrosis, as a result of these abscesses had brought away the permanent tooth with that portion of bone immediately surrounding it. This leads one to believe that the sufferings of children from these conditions are not sufficiently appreciated, and it is certain that the little ones are neglected much too often.

We find dental caries beginning in teeth as early as two years of age. It is as painful to prepare cavities in the teeth for the little ones as it is for the adult, and perhaps more so. Where the cavities are small, we may fill the teeth with the same materials as are used for the permanent teeth. Where cavities are large in molars, we may not always be able to make the proper excavation. In these cases silver nitrate will aid in relieving the sensitiveness and also in arresting decay. After a few



applications we will find that we will be able to remove the majority of decay and make a filling.

The occlusal surfaces of the molar should be opened very wide in order that the filling may extend beyond the sulci for the purpose of preventing food from packing in and fermenting, thus preventing recurrence of decay. When silver nitrate is used, care should be taken not to have the tooth blackened near the margin. The improved copper cement, amalgam, or synthetic, should be used for the filling of the occlusal surfaces of the molars. If the cavities are deep-seated a gutta percha intermediate should first be placed on the floor of the cavity and covered with cement. The proximal surfaces of the deciduous molars are extremely difficult to handle. Owing to the extreme sensitiveness of the proximal cavity, the gum which approaches very close to the contact point, and the large size of the pulp, we usually find the preparation of these cavities a strenuous task if we succeed in making a perfect operation. We find it necessary to exercise the greatest care and skill in the preparation of these cavities because of the danger of encroaching upon the pulp. When small, we usually find the decay close to the occlusal portion of the surface. These cavities frequently may be prepared without entirely destroying the contact point of the tooth. Amalgam is the best filling material to be used. A filling never should be bridged to a neighboring tooth. These fillings should be as carefully made, contoured and polished as the fillings for the permanent teeth on account of the necessity for the protection of the gum tissue, the maintenance of the mesio-distal width and the preservation of the tooth. The difficulty is that parents usually do not bring their children until decay has gone far enough to cause toothache. Then the first effort should be to relieve the pain, and nothing more should be done until a subsequent sitting. If the pulp is exposed, which frequently is the case, it may be devitalized, the roots filled and the crown filling made.

The first permanent molar which usually erupts very quietly, is often mistaken by the parent for a temporary tooth and for that reason frequently is neglected. All dentists however should appreciate the importance of this tooth in the arch. These usually are the first of the permanent teeth to be attacked by decay, and if decay has not started, it may be prevented by cleansing the occlusal surface and flowing into the pits and fissures some improved copper cement. Where decay has progressed, the gold inlay makes a splendid filling. Where cavities are small, synthetic is frequently the most desirable material to be used.

#### THE DENTIST'S AND PARENT'S RESPONSIBILITY

Sad though it may seem, it is true that many parents not only are ignorant of the necessity of preserving the temporary teeth, but are too busy with social functions or the accumulation of wealth, to look after the proper care and training of their children. The failure of the den-

tist to teach the parent that the neglect of the proper training of the young child that it may grow up strong mentally and physically, allowing disease to enter the body when it could be prevented by proper care is criminal, and parents should be made to understand that they, with the dentist are held responsible for the welfare of the child. It is possible that parents do not realize that in the interest of their children a healthy body is more conducive to happiness than the inheritance of great wealth.

Dentists should see to it that they instruct mothers to teach their children to acquire habits of thorough mastication and daily cleansing, the use of the tooth brush, the necessity of caring for the temporary teeth the bad effect of bolting the food, the need of correcting abnormal conditions about the teeth and the repair of each individual tooth, whether it be deciduous or permanent, to visit the dentist early and often before the need seems apparent, as well as the necessity for preserving the first permanent molar.

The American flag is the symbol of liberty, not only to our own country but to all the countries of the world. Parents teach their children this fact for the purpose of thrilling their young minds with ideas of patriotism and loyalty. This is right; but are parents and dentists wholly loyal and patriotic if they do not use every means within their power to give to their country men and women with healthy bodies and healthy minds? Early in life the child is dependent on others; the dentist and parents stand guard at the gateway of health, and, if having slept on duty, the enemy enters, the body is impaired and the system is poisoned.

If one will take care of his teeth when he is young, I'm told,

His teeth will take good care of him when he is getting old.

10111 Euclid Ave.

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### A Most Effective Styptic

The most effective styptic known to the writer, for obstinate cases of hemorrhage after the extraction of a tooth or root, i. e., cases that will not respond to the more usual remedy such as adrenalin, will be found in the formula of Dr. J. P. Buckley, known as Phenol-Sulphonic Acid. A pellet of cotton wet with the acid and inserted into the root socket will cause an almost instantaneous cessation of hemorrhage without causing any discomfort to the patient, and will be found to be perfectly harmless even if left in the root socket for twenty-four hours.

—H. A. Cross, *Dental Review*.



## ORAL PROPHYLAXIS FOR CHILDREN\*

BY MABEL BENNETT YOUNGER, D.D.S., CLEVELAND, OHIO

**F**OR SEVERAL YEARS the word "efficiency" filled a very conspicuous place in the affairs of the world. Recently an unpleasant association has sprung up with the word and in its place has come the word "conservation." It is in every newspaper and on every person's lips. At probably no time in history have people been so often requested to conserve in so many different ways, as now. It is doubtful if any audience would be at all surprised at being asked to conserve on anything.

During the past four and a half years of war the loss of life in the world has been so great that the different nations are recognizing more than ever before the necessity of putting forth very strenuous efforts that the children of the present may have every necessity required for their development into strong and healthy men and women.

Many different organizations have been formed and every day or two we read of some new endeavor being advocated or taken up for the betterment of children and the advancement of children's welfare work.

In making a plea for aid in the advancement of this movement is it not logical that the interest and the services of the dental profession should be enlisted? Shall we not ask ourselves individually the question, is each operation, be it operative, orthodontic, or prophylactic performed in the best possible manner of which it is capable? Shall we not set a new and higher standard for each operation performed?

In the attempt to reach the children it should be the duty of the dentist to stimulate an interest in healthy hygienic mouth conditions first among his adult patients, for the men and women of today are the mothers and fathers of tomorrow. It is on their direct care that the children depend, so that the seed of a keen appreciation of preventive measures in dentistry wisely planted will bear its fruit among their children.

In oral prophylaxis the carrying out of the highest ideals of dentistry is involved. There probably is no greater service the dentist can render his patient than to teach him the proper care of his own mouth, for it is the regular home care in maintaining cleanliness combined with the periodical prophylaxis treatment by the dentist which keeps the oral cavity in a healthy condition. The dentist should advise the patient as to the proper method of brushing and the dentifrice, floss, and brushes which are best for his particular use.

The interest of the prospective mother in the care of her own teeth is of very great importance. The dentist may suggest those articles of

\*One of a symposium of papers read by women dentists at the Ohio State Dental Society, Dec., 1918

diet for her consumption which will be conducive to the forming of mineral salts. The matter of diet usually is taken up by the physician but added emphasis in many instances may be helpful and the dentist has assured himself that this advice has been given.

Inasmuch as the first two or three years of a child's life the care of the mouth is in the hands of the mother or nurse, it is to her that the initial preventive measure is intrusted. This is, necessarily instructional. One can demonstrate to the prospective mother the placing of aseptic cotton on the index finger, dipping in a two per cent. solution of boric acid or normal salt solution, and massaging the mucous membrane surfaces of the child's mouth. Care should be taken to use a fresh piece of cotton or gauze each time for this purpose and the process should be repeated before each feeding. This method may be used on the infant's teeth and mouth until all the teeth have appeared in the arch.

Frequently the dentist is asked by mothers at what age is it advisable to begin the use of a tooth brush for a child. My reply invariably has been that it is not a matter of age but whether the child was taking solid food which would adhere to the surfaces of the teeth. My advice was to secure a small brush having a single row of bristles and brush the teeth the first thing in the morning and after each meal in addition to the gauze or cotton.

The child's first visit to the dentist is to him one of considerable importance, and should be made before there is any evidence of decay. This visit usually is made about the age of three or four years, unless there is a question of doubt concerning the mouth condition in the mind of the mother when the child should be seen by the dentist earlier.

If a child has not had a feeling of fear inspired in him on this first visit, subsequent visits may be anticipated with pleasure. A good rule to follow with children is never to start working until an acquaintance with them has been established. We all know how the small child wishes us to think he is quite "grown up". If this attitude is taken and an effort is made to secure his attention a hand mirror may be placed in his hands, his attention then focused on the number of teeth, their color, their purpose, and the reason given why they should be cared for each day. It has been my experience that it is apparently as gratifying to a child to be given a reason for doing a certain thing as it is to an adult. If there are plaques on the teeth, Dr. Skinner's disclosing solution may be used and an explanation given to the nurse or parent regarding the presence of these plaques on neglected tooth areas.

When the child has reached the age at which he can manipulate the tooth brush for himself he should be properly instructed in the regular



daily care of the teeth, thus emphasizing the instruction given by the mother who has herself been instructed in the proper method of brushing.

The dentist should tell both the mother and child the value of proper mastication, the purpose of the teeth in the mouth, and the effect on the jaws of the proper mastication of food and the effect on the body of improper mastication.

One will be required to remind a child very often of careless ways in which he has fallen both as to brushing and mastication before the proper method becomes a thoroughly established habit. It is not an easy matter to teach this to a child for far too many adults who are patterns suffer from this very bad American habit of rapid eating.

At about four, five or six years the dental arches should be expanding, spaces appearing especially between the anterior teeth the space corresponding to the child's age, its development and the size of the permanent teeth as determined by means of the X-ray. If conditions do not nearly approach the normal, this is the time to institute orthodontic measures to assist nature. Too many of our profession are prone to look too leniently on these cases of faulty occlusion and to expect far too much of Mother Nature with the attendant bad effects. By far too large a percentage of the cases of pyorrhea later in life are aggravated by malocclusion. It should be the duty of the dentist to take up with the parent the necessity of starting orthodontic treatment for the child at an early age and to inform him of the consequences of lack of treatment, whether or not he later acts on this advice.

Very often deep pits and sulci are found in deciduous and permanent molars and bicuspid which may be protected by forcing cement into them after their having been made clean and dry. This also is beneficial in cases where there is a strong tendency to caries.

The dentist cannot be over vigilant in the detection of cavities which should be filled immediately and care should be taken that the contact is retained and that the filling does not impinge on the periodontal tissues.

Too much value cannot be placed on the oral prophylaxis treatment given at definite intervals for the preservation of children's teeth. It has a tendency to reduce caries to a minimum, thus retaining the temporary teeth in the arch until the resorption of their roots is complete and the eruption of the permanent teeth has taken place. In this way favorable conditions are maintained for the development of the normal dental mechanism the purpose of which is mastication. Without the teeth in perfect condition we cannot have proper digestion; without proper digestion we cannot have proper assimilation, without which we cannot have health.

To obtain the highest form of oral hygiene it is imperative to have the co-operation of the patient in order that the dentist's instructions

may be carried out to secure absolute cleanliness. It is definitely known that if the mouth and teeth are kept in a healthy condition physical disturbances resulting from focal infection about the teeth can be prevented and weaknesses eliminated. Thus the general health of the children in our schools and eventually the health of a nation may be improved by the maintenance of normal mouth conditions.

Dr. Victor Vaughan, ex-president of the National Medical Association, says, "One or more decayed teeth with constant infection, so impairs the vitality of a child that physical and intellectual development is impossible." This being true can there be anything more important to the health of coming men and women than the hygiene of the mouth of the boys and girls of today?

Every dental office may become a little centralizing school of dental education in which the dentist contributes not only directly to the health of his patients but indirectly to the general welfare of his community. Probably no organization has greater opportunity for the conservation of the individual's health than has the dental profession and never was the necessity for conservation greater than it is today. Our profession may then be regarded as one of the first in the list of organizations whose sympathies and services are enlisted in the children's welfare cause.

618 Rose Building.

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### DENTAL TREATMENT FOR CHILDREN IN THE ROCHESTER DENTAL DISPENSARY\*

BY ELBERTA T. ROSA, D.D.S., ROCHESTER, N. Y.

**W**HEN A CITIZEN of Rochester goes outside of New York State and upon being questioned, replies that he comes from Rochester, he is at once asked if he means Rochester, Minn. Those great surgeons, the Mayo Brothers, have, by their wonderful work, put the town of Rochester, Minnesota, on the map to such an extent that it seems to entirely overshadow Rochester, N. Y., outside the bounds of the Empire State, in spite of the fact that we do some things and have some industries which are world wide in their fame and in their field and of which we are justly proud; and we feel that it will not be long before our city will be known—if not exactly as the Mother of Free Dental Dispensaries, at least as among the pioneers in that movement.

The way the people of Rochester have approved the idea of the Dental Dispensary, after once understanding it, and have availed themselves of the help the dispensary offers, shows there is an urgent need for something of this nature in every city. Of course the great bulk of the people whom we wish to reach has not heretofore been educated to

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\*One of a symposium of papers read by women dentists at the Ohio State Dental Society, Dec., 1918.



the need of constructive dentistry and prophylactic dentistry was and is, in a measure, still over their heads. Their notion of a dental operation was one that prevailed fifty or sixty years ago—which was to wait until a tooth ached and then have it extracted.

The first thing we had to do was to change their point of view and educate the public, especially the children and their mothers, to the need of oral hygiene and stimulate their interest in order to get their co-operation. Only a few are born with a sense of this need, the majority have to achieve it, do achieve it, but many of them have to have it thrust upon them.

This promotion work is done in a large measure by our school lecturer, who visits all the public, parochial and industrial schools twice a year and gives to the children stereopticon talks on the care of their mouths. She tells them in a simple way the pathological conditions that may result from neglect and uncleanness of the oral cavity. She also instructs them in a general way in the mouth toilet. She usually approaches the subject from a little different angle when talking to the little ones than when addressing the older pupils. Seventy-one thousand nine hundred and forty-two pupils were reached in this way last year.

Immediately following her, or coincident with her, a squad of dentists or of dental hygienists, under the supervision of a dentist, begins prophylactic work in that school. "Prophylaxis" probably does not quite describe the work, because it cannot of necessity be quite regular or systematic or thorough enough to merit that term; inspecting the mouths of the children and administering a technical cleansing of the teeth probably is a more accurate characterization of the procedure, because that is exactly what it is.

These squads, numbering from 6 to 10 go into the schools where their coming has been anticipated by the setting up of small simply-constructed chairs and two-drawer cabinets measuring about 20 inches square; engines, sterilizers, medicaments, towels, napkins, hampers, etc. also are sent to the schools before the arrival of the operators.

Sometimes a classroom is set aside for their work, but just as often the work is done in corridors or basements or any place convenient for the school at that time. The schools of the city at present do not furnish adequate facilities for this work, but no doubt the schools of the future, as a knowledge of this need grows upon the public, will do so.

Also, before these operators go to work in a school, suitable literature, in English, Italian, Yiddish and Polish, is sent to the principal and teachers for distribution among the parents, emphasizing the urgency of this treatment, so that both children and parents are prepared beforehand and are looking forward to their coming with interest. The operators always are received with the greatest cordiality and there is the

heartiest co-operation on the part of the principal and teachers. Any lapse from this graciousness easily could be forgiven when it is understood that necessarily we interfere to some extent with the routine of the school work while there.

We aim to reach all the schools in this way every six months. The first time the schools were visited for this purpose, 33,500 children received prophylactic treatment and on the second visit almost 42,000 were treated. On the first visit there was a refusal to submit to treatment of 15% of the registration and on the second visit a refusal of 10%, showing that the idea was being met more favorably and that it was gaining ground. Nothing indicates the spirit in which the public is receiving the work of the dispensary better than this fact, because among the class of people we design to reach, prophylaxis, if not exactly held in contempt, is considered quite unessential. When work of *this* character can show such an increase in six months, it is about the best criterion of the way the dispensary work in all its branches is being received.

It is right in this work that we recognize and realize the imperative need for a Free Dental Dispensary. Children as old as 12 to 15 present themselves for treatment with mouths in a most lamentable condition, who never have been near a dentist's office and to whom a dentist is but a name. It is in this work that a dentist or dental hygienist receives the greatest enlightenment for the need of dispensaries. While the child's mouth is being cleansed and charted, the operator further instructs him in the care of the oral cavity, duplicating in a way the work already done by the school lecturer but by repetition and reiteration emphasizing it. The school teachers do not know the condition of the children's mouths; parents cannot know except in individual cases, and even *their* ignorance is appalling; and dentists in private practice have their minds and time so filled by those under their immediate care that *they* do not understand it. It is probably only the people in this work—the dentists, the dental hygienists and the school nurses who really *know* the conditions and recognize the need of dental dispensaries as a logical sequence to their work, for we must remember that prophylactic work is done in almost 100% of the cases in mouths which need to an alarming extent operative dentistry or orthodontia or both; and one feels if there is nothing that can be done for them in that way that you have come up against an insurmountable problem and that prophylactic work in mouths that must continue in that condition is of a more or less hopeless character. Of course, you feel by educating them you may benefit the next generation but the outlook for the present generation would be hopeless if there were no restorative treatment.

Fortunately we now have in Rochester the "follow up" treatment in the dispensary. After the patient's mouth has been cleansed and ex-



amined, he is instructed to go to his family dentist or to the Dental Dispensary for needed work.

At the dispensary we will take care of an emergency case at any time, but for systematic, permanent work, the parent or guardian of the child must make application for the child's treatment. The rule governing that is that we will receive a child from a family of 2 with a weekly income of \$15, from a family of 3 with a weekly income of \$20, from a family of 4 with a weekly income of \$24 and in excess of that number any child from a family with an income of \$5 per week per capita. A nominal charge of five cents a visit is always made solely to give the child a feeling of responsibility. After the child has been accepted for treatment, he is given an appointment and on his next visit awaits his time in a small reception room just outside the infirmary. In the infirmary, the dentists numbering from 20 to 30, have the use of the most modern equipment—Ritter units and chairs, cabinets specially designed for the dispensary. As an operator finishes with a patient and dismisses him he presses the button on his unit which signals the clerk in the little ante-room that he is ready for another. In the meantime he prepares his cabinet and tray for the new patient, who comes in with two cards, a large one and a small one, each giving the child's name, address, age, etc. On the large card is charted and recorded all permanent work—amalgam fillings, inlays, root-canal fillings, etc. together with the operator's number, by which he is known. On the small card are recorded all treatments of a temporary nature such as root-canal treatment, use of obtundents, use of cautery, devitalization, removal of pulp, etc. By this means the dentist who next cares for the child can ascertain from these cards the treatment the child has received on previous visits.

In the majority of cases when a child first presents himself and you look in his mouth, you wonder where to begin; the teeth seem equally bad. These conditions so frequently seen, is the strongest argument for a free dispensary or some place where these children can have adequate treatment at a minimum expense.

Recently a little girl 14 or 15 years old came to us for work and when we had finished absolutely every tooth in her mouth had received some sort of an operation. The upper incisors and cuspids had been crowned, the bicuspid filled and the molars restored by inlays; the lower incisors and cuspids were filled and the bicuspid and molars received much the same treatment as the uppers. The mother of this child had taken her to a dentist and the fee that the dentist would have had to charge put the work entirely out of the realm of the possible for that mother. However, she was able to come to the dispensary and the child's mouth was put in the condition I have mentioned. Needless to say she

is a most appreciative girl. I dislike to think of what would have resulted if there had been no dispensary to turn to.

Right here is a good place to give you some real idea of the amount of work being done in the Rochester Dispensary. You will please keep in mind what I said earlier about the children coming to us with almost nothing ever having been done to their mouths, and who probably never would find their way to a dentist until they were older and had become self-supporting, and then *too late*. The following table will show you the treatment the children of Rochester received in only one month—an average month:—

Tooth treatments .....	5,040
Root treatments .....	1,833
Crowns .....	7
Capped .....	33
Root fillings .....	242
Silver nitrate .....	83
Amalgam .....	1,925
Cement .....	687
Synthetic .....	283
Guttapercha .....	25
Orthodontia .....	116

Figures presented in this way do not convey much except statistical information; but please consider it in this way; 242 root fillings mean 242 teeth lost in every month in Rochester, or 2,904 teeth every year, of which a large majority are first molars. We already have extracted over 6,000 teeth of which 1750 were permanent ones. Consider the 1925 amalgam fillings which in a vast number of cases of that class of children would be lost if the City of Rochester had not provided means of rescue. I need not mention the 1000 cement and synthetic fillings which add to the total of teeth saved. When these perils have been overcome, when the mouths of these children have begun to approximate to a state of safety, when this great bulk of imperative work has been cleared up, the dispensary has plans for a more definite method of operating the infirmary. We hope in the future to divide the work into separate, distinct clinics: one for root-canal work only, another for amalgam, another for inlays, another for synthetic work and so on, but at present because of the immediate jeopardy in which we find the children's teeth, this plan is out of the question. All the operators in the infirmary now do all classes of work.

I have said nothing about the work being done in orthodontia. The photographs I have brought with me will show the work in that branch better than anything I can say. I would like to cite one case, however, by way of illustration: A boy of about 14 came to the dis-



pensary with his mouth in such vile condition that even the otherwise most obvious cavities could not be seen. This was due to two things—the boy was a dirty boy and there was such a condition of malocclusion or no occlusion at all that to keep his mouth in a hygienic condition would have been a Herculean task. Speaking of the case to the supervisor of the Orthodontia Department, after a casual look into his mouth, I said, “His teeth did not occlude anterior to the molars, did they?” and she said, “No, and they only *hit* there.”

Of course this is not the place to go into the pathological results of malocclusion and the needs of orthodontia generally, but I simply want to call your attention to the suffering that is spared many, many children of Rochester through that department: for children of the class we design to reach, whose *sole* need is orthodontia, never would come under the observation of a dentist in private practice. This boy has a pronounced case of incipient pyorrhea alveolaris. It does not take much foresight to see what his mouth would become in a few years; but in Rochester, thanks to Mr. George Eastman, we can correct some of the conditions in his mouth and alleviate the others.

Let us go back just for a moment to the operative work: A child of three with her older sister presented herself for treatment. There was considerable fear displayed by the child, which we ascertained was due to the foregoing of her nap in order to meet her appointment. We told the sister not to bring her the next time until she had had it. This solved the problem and the child became an easily manageable little patient. She had a wonderfully clean and wholesome mouth—a marked contrast to the majority of our patients even at that age. A small amalgam filling was inserted for the baby and she was dismissed for six months. I am simply quoting this case by way of contrast to the one to whom I referred a few moments ago.

It does not take a great deal of vision to see the condition of the mouths of the children of Rochester 15 or 20 years hence, after we have put into the best possible shape such mouths as that lamentable case referred to first, and especially if we can begin with the babies. We have so many of them and if we can keep them under treatment until they have passed childhood, we shall then have no such pitiable mouths to deal with any more than you have in your private practice. It is not so much the work we are doing just now as the outcome of that work that is important: The fact that we will be able to carry these children along and to keep their mouths in as nearly as may be normal condition rather than to *put* them in condition after they are almost hopeless.

Possibly you have come here expecting to hear something of the unique, freak, or unusual cases that come to us. Our dispensary was

founded and is equipped and conducted to reach the common every-day needs of the majority of the class that it is designed to reach. No man or group of men of intelligence could be prevailed upon to found a dispensary for an occasional unique case. Although we get those cases, they never would justify the founding of a dispensary. Such cases by virtue of their very unusualness would doubtless be cared for by a dentist or doctor, but a dental dispensary is founded solely to take care of just the ordinary ravages of caries and malocclusion, because that strikes at the heart of the situation and meets all needs and all conditions of the majority of the class we want to reach—in fact the other cases are so few as to be negligible. It is the *volume*—the *amount* of work like that in the mouths of the cases cited that is the need of the children of Rochester. I cannot emphasize this point too much. It is the ordinary class of work that is needed and the only unusual thing is the vast amount that must be done.

Doubtless you are interested in the spirit with which the people of Rochester are availing themselves of our help and in the benefits to the little patients. As I said before, the zeal with which they accept the idea of prophylaxis is one of the best indications of the spread of the doctrine of Oral Hygiene. The dispensary has become rather “vogue” with the children; if one child of a group of friends comes to us, the others feel quite “out” of it if they also do not come. The fact that if we treat one child in a family, we always get the remainder of the family, shows the growth of the idea. When completed we dismiss them for six months; in the large majority of cases they return when sent for, indicating that their enthusiasm is not of the pop-bottle variety. The Social Service secretary tells me that parents from 25 to 30 miles away have come to her, begging her to accept them because they have learned of the work in our dental clinic and that it is conducted under the most modern conditions of treatment and sanitation. Of course, that is out of the question.

I wish I could speak definitely about the benefits to our patients. We have been in operation, as I said, only a little more than a year and as the children return only after six months, it really would be very rash of me to commit myself on that question. I only can say that the benefits to the children who come to us are just the same apparently as the benefits to the children who come to *you*. Their needs are the same and their benefits corresponding; the ills that *we* avert are just and only the ills that *you* avert, and the good we hope to accomplish is the good *you* accomplish—nothing more or less.

You are all aware of the conditions that effect the health and happiness of the children of any city and these are the conditions that must be alleviated and corrected to bring health and happiness to this



class of children, and unless there is a public means of meeting these conditions, these children must go without health and happiness accordingly, and as a natural sequence your city or community suffers to the same extent. Rochester is in no sense unique in having just that class that needs helping; it is typical of every city in the country in that respect; it is just like Columbus, Cleveland or Cincinnati. It is unique only in this, that it recognizes the degenerating influences of bad oral conditions and it has supplied the means of meeting and combating some of them. What Rochester has done to meet this need, it is possible for every city in the country to do. Of course, every city is not so fortunate as to have a Mr. Eastman to shoulder the bulk of the financial burden, but "God doth with the hour produce the man;" and when you recognize the urgency of this thing and have the vision to see what it will bring to your city in later years; if you have the right spirit rightly directed, you can without doubt find some man or group of men in your wonderful cities willing and glad to materialize your dreams and make possible a dental dispensary much superior to Rochester's, perhaps. By following in our wake and so being able to profit by our mistakes and experiences, you should accomplish soon better things than we have as yet attempted.

It may be fair to say that we have a much larger vision of endeavor than any we have as yet tried to put into practice, the contemplation of which fills us with anxiety and enthusiasm to lay our foundation well and strong by undertaking for the present only the more imperative demands made upon our resources. We consistently believe our efforts will result in bettering the physical and moral well-being of our community and cordially commend this line of endeavor to our profession with confident assurance that it is a most practicable method of benefiting humanity in a most fundamental way.

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### Repairing Vulcanite Dentures

Repeated vulcanizing for repairs will soon cause a vulcanite plate to become brittle and useless. I find it better in many cases to substitute new rubber for the whole denture rather than to keep on repairing a plate. I proceed as follows: cast correct model of denture, remove plate from model and cut into sections with saw. I usually cut the plate out in one piece in the case of a full upper and the remaining part of the plate in from four to six pieces (this is done in such a way as to facilitate parting in the flask). I then reassemble the parts correctly on the model with a small amount of wax. The case is then treated in the same way as a waxed up denture, invest, part, heat up the flask, and remove sections of vulcanite, leaving teeth embedded and pack in the usual way. This procedure takes very little longer than an extensive repair, you will get probably three times the fee and will impress your patient with the permanency of your work.

—A. G. Salisbury, Takaka, New Zealand, *Dental Review*.

## THE NEED OF FREE DENTAL TREATMENT FOR CHILDREN\*

BY MISS LILY D. ATKINSON, COLUMBUS, O., SUPERINTENDENT  
CHILDREN'S HOSPITAL.

Dr. Gillette Hayden in introducing the speaker said: "Before introducing Miss Atkinson, I will say in passing, that we are to have a moving-picture film later, which has been very graciously lent us by the Michigan State Society, prepared by Dr. Rogers Spalding, whom some of you know. This film shows the method of brushing teeth, instructions given to children in caring for their teeth, the most commendable methods thus far adopted. The first part represents the detail of using the brush; in the second will be shown a child only two and a half years old, using the brush, Dr. Spalding's child.

"The next speaker on the program will give us a talk on the work being done or in contemplation, by the active workers of the Children's Hospital, of Columbus.

"No one is better qualified than is Miss Lily D. Atkinson, to tell us the special need of children as regards the care of their teeth. Miss Atkinson has spent many years in observing conditions in the mouths of children, particularly children who come to the hospital where she is engaged. It affords me much pleasure to introduce her to you."

**F**IRST I want to express my appreciation of the honor you pay me in asking me here to speak to you of my experience with a free dental clinic. I regard it as a great pleasure and as a rare opportunity to secure your advice upon this problem, which, as yet, we have not worked out in Columbus.

At the risk of tiring those of you who have followed the program of Children's Year, as inaugurated by the Children's Bureau, I want to relate some of the reasons why this program was adopted and the results that have followed:

For some years there has been going on in various parts of this country intensive studies of the physical condition of children. Enough of these studies through medical inspection in public schools, and like health studies, are available to give the definite information that an alarming per cent. of our children are not physically fit, and that the United States is losing every year 300,000 children of pre-school age whose lives might be saved if our nation were educated to the facts and to the causes.

Probably the draft examination of our young men, between the ages of twenty-one and thirty-one years, revealing the fact that at least one-third were physically unfit for military service, was the most astonishing and revealing surprise we ever have had. Then when the causes of rejection were studied and tabulated, we were further confronted with the fact that a large proportion of the causes of rejection were preventable or curable. Quite enough reason for our nation pausing and considering what could be done to prevent such conditions in the future.

\*One of a symposium of papers read by women dentists at the Ohio State Dental Society, Dec., 1918.



And so, under the direction of Julia Lathrop, director of the Children's Bureau, Children's Year began in April, 1918.

Miss Lathrop figured that the first step in solving a problem was to find out its size. With this in view, Children's Year started with the weighing and measuring test, the idea being to weigh and measure every child of pre-school age in the United States. No small task, you will agree, as there were supposedly 12,000,000 children of this age in our country.

This test was to show how many children of this age we had, where they were and what physical condition they were in. In other words, an inventory of the childhood of this nation. You know that we roughly estimate a child's physical condition by its height and weight.

I am told by a member of the Children's Bureau that there are in Washington now 6,000,000 of these weighing and measuring cards, that the response of the American people to the call to "get a square deal for the children" has been met in a way heretofore thought impossible, and that the tabulation and analysis of these cards will give us definite information upon which to build a constructive program for the future. After the weighing and measuring test came the request from the Bureau that we accent in any way possible the need for recreation in every child's life; this was done during Play Week by pageants, playground activities, etc. After Play Week comes the "back to school movement". You know that within the last year the United States supreme court has declared the Child Labor Law unconstitutional, and that already thousands of our children who should be in school are back in the cotton factories and mills, undermining their health and jeopardizing their future efficiency and happiness.

I recently asked Dr. Rude, of the Children's Bureau, what the program for children would be next year, and she replied that they had been asked that question by many people and that as yet they had not decided.

I am hoping that it will be just as well organized and forceful a campaign for compulsory medical and dental inspection in every public school in the country. I am still doubtful as to the advisability of including dental inspection under medical inspection. I wonder whether dental inspection would be more effective if a separate department were created, headed by a dentist?

The importance of good teeth as a general health measure is no longer disputed by anyone, and the medical profession is fast recognizing the definite relation between bad teeth and many diseases. Much attention is being given to focal infections and their relation to malnutrition, rheumatism, heart, kidney, and nervous diseases. Only this week has an eminent psychiatrist announced that certain forms of insanity are produced by bad teeth and that they can be cured with proper

treatment. It seems to me that all these scientific facts which you have been instrumental in presenting to the world, put upon your profession an enormous responsibility, and we look to you to show us how to get the public interested in dental inspection and free dental clinics. They must, I am sure, be a part of a great nation wide educational program for better health. We do not doubt nor ask the right that a child has to be educated in reading, writing, and arithmetic, nor should we question his right to be educated in regard to the factors which make for a sound body and mind. I believe that medical inspection and dental inspection must be *compulsory* for several generations if we ever are to get to the point where they need not be compulsory.

We have a free dental clinic in connection with the Children's Hospital and we regard it as an essential part of our medical service to the community. It, however, only reaches our patients. I am anxious to see the same opportunity for every child in our community, for I understand that 80% of our school children are in need of dental service.

It was interesting to me to see how quickly our medical staff co-operated with our dental department. Now every child's teeth are examined by our physicians and several of our nose and throat specialists prefer to have the teeth put in good condition before performing tonsil, adenoid, or nasal operations. It would, I believe, be the experience of the community if they adopted dental inspection and established free dental clinics; dentists, doctors, nurses, social workers and educators would all co-operate to bring about the education of the masses in this physical need.

*Compulsory medical and dental inspection* for every school child in the State of Ohio is my idea of the solution of this problem.

We cannot begin too soon with this program, and with it must go a new conception of what physical education means.

Up till now we have to acknowledge that it has been a joke if we take seriously the draft and other available statistics.

Physical education, which does not teach us in a very practical and definite way how to live in order to be physically fit for our every-day job and life, is not worthy of the name.

I thank you.

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## TO WHAT EXTENT CAN INFECTED DENTIN AND CEMENTUM BE STERILIZED BY MEDICATION?\*

BY MATILDA MOLENHAUER BROOKS, BOSTON, MASS.

(FROM THE RESEARCH INSTITUTE)

THERE ARE so many different medicaments used by the dental profession that a series of experiments was conducted to see just what the efficiency of the various remedies is.

Before going into a detailed experimentation of the various medicaments, a rough draft on all that were to be tested was made. This consisted in placing a whole tooth in a large amount of the medicament, upon the theory that if no per cent. efficiency is obtained by placing the tooth under ideal conditions for sterilization, there would be no point in carrying out more detailed experiments under less ideal conditions.

With this point in mind, there were three series of experiments independently performed; the first and the third were mixed salivary infections, and the second pure streptococci. One hundred and ten different solutions were used with ten teeth for each test, making over three thousand teeth for this one experiment alone. The tooth was kept in the medicament for twenty-four hours, after which it was taken out under all sterile precautions and each tooth placed in a culture tube of sterile dextrose bouillon broth. The first chart shows the results obtained in each series at the end of twenty-four hours to fifteen days in contact with sterile medium. The second chart is a brief summary averaging the results obtained in this first experiment, showing also the large number of medicaments which show zero per cent. efficiency.

The next experiment was planned from the results obtained in the previous explanation. From the medicaments which showed the greatest per cent. of efficiency in Experiment 1, a carefully selected number were used. The method was as follows: teeth were prepared by cutting off the crown and opening up the root-canal. A dressing consisting of a J & J absorbent point saturated with medicament was then placed in the root-canal of the infected tooth. The whole tooth was then placed in a sterile tube and allowed to remain a definite length of time, at the end of which the dressing was removed under all sterile precautions and cut into four different pieces, A, B, C and D, beginning with the apical end of the crown end, and each piece was placed in a tube of sterile dextrose bouillon.

Three sets of experiments, in which the dressing was allowed to remain five, twenty-four and forty-eight hours respectively, were performed. By comparing Experiment 11, Chart IV, the preponderance of positive

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\*Given as a part of the Seminar, at the State Dental Society, December, 1917

signs indicating bacterial growth is evident. The five-hour period of treatment gives the best results of efficiency, and the forty-eight hour period is almost in every case zero efficiency, as indicated by the plus signs of bacterial growth. There were two essential parts involved in this experiment—firstly, placing the treated teeth in sterile tubes to test the efficiency of the medicament in a case where there is no periapical abscess; and secondly, placing the teeth in infected broth to parallel conditions of periapical abscesses (Experiment II, Chart IV and Experiment III, Chart V.)

There is also a summary of results. The first summary shows the results obtained which have some efficiency in sterilization, where Experiment II is involved. The second summary shows the results of Experiment III, where there is some efficiency in sterilization. The comparatively small percentage of medicaments as selected from the number used and relatively small percentage of efficiency even among these is very striking.

Another experiment which dealt with the extent to which infection takes place was made. Under sterile precautions, cultures from various areas of the infected tooth were taken, using twenty-one different treated teeth selected from the previous experiments. These results are incorporated in Experiment IV, Chart VI.

Following these general experiments, a few special ones were undertaken with an endeavor at a constructive evidence. The silver ammonium formula was used (Exp. V, Chart VII) with very good results and Dakin's recent discoveries, Chlorazene cream, Chlorazene and Dichloramin-T were given special attention (Exp. VI, Chart VIII). It is noteworthy that Chlorazene four per cent. aqueous solution in six treatments for six successive days treatment, produces 100 per cent. efficiency in our experiments. Tests as to tissue destruction show no injury to the tissue. Although 100 per cent. efficiency was obtained with Dichloramin-T, the 15 per cent. solution was used and this has marked tissue destroying properties at that per cent. dilution. But according to the results which these experiments showed, Chlorazene with an adequate number of treatments appears to be the ideal disinfectant.



## EXPERIMENT I — CHART I

DETERMINATIONS OF THE ABILITY OF MEDICAMENTS TO STERILIZE INFECTED DENTIN AND CEMENTUM WHEN EMERSED IN THEM FOR VARYING PERIODS OF TIME AND THE RELATION OF THE INCUBATION TIME FACTOR TO THE EFFICIENCY

No.	Medicament	No. of teeth used	SERIES I													SERIES II													SERIES III												
			HOURS OF INCUBATION													NO. OF TEETH INFECTED													NO. OF TEETH INFECTED												
			24	48	72	96	120	144	168	8d	9d	11d	13d	15d	24	48	72	96	120	144	168	8d	9d	11d	13d	15d	24	48	72	96	120	144	168								
1	Phenol..... 5%	10	0	0	7	7	7	7	7	7	7	7	7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0							
2	..... 2%	10	9	10	—	—	—	—	—	—	—	—	—	10	1	1	9	—	—	—	—	—	—	—	—	—	1	7	7	7	7	7	7	7							
3	..... 1%	10	9	—	—	—	—	—	—	—	—	—	—	10	—	—	—	—	—	—	—	—	—	—	—	10	—	—	—	—	—	—	—	—							
4	Formaldehyde..... 40%	10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0							
5	..... 30%	10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0							
6	..... 20%	10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0							
7	..... 10%	10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0							
8	..... 5%	10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0							
9	..... 1%	10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0							
10	Iodin, U.S.P..... 7%	10	0	0	3	6	7	8	—	—	—	—	—	0	0	0	0	0	0	0	0	0	0	0	0	0	7	9	—	—	—	—	—	—							
11	..... 5%	10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0							
12	..... 2%	10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	2	2	2	2	2	2	2	0	0	0	0	0	0	0	0	0							
13	..... 1%	10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	2	2	2	2	2	2	2	0	0	0	0	0	0	0	0	0							
14	..... 0.5%	10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0							
15	Chloral Phenol.....	10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0							
16	Tri-cresol-formalin.....	10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	4	8	8	—	—	—	—	3	4	8	8	8	—	—	—	—							
17	Iodin and Cresosote..... Con	10	0	0	1	3	3	3	3	3	3	3	3	10	—	—	—	—	—	—	—	—	—	—	—	—	0	0	0	0	0	0	0	0	4						
18	..... 50%	10	0	0	2	4	4	5	5	6	6	6	6	3	4	4	6	6	7	7	7	7	7	7	7	0	0	0	0	0	0	0	0	0							
19	..... 25%	10	0	6	6	8	9	9	9	9	9	9	9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0							
20	..... 10%	10	0	8	10	—	—	—	—	—	—	—	—	1	3	3	3	3	4	4	4	4	4	4	4	1	0	0	0	0	0	0	0	0	0						

EXPERIMENT I — CHART I — Continued

[illegible]





## EXPERIMENT I — CHART I — Concluded

[illegible]



## EXPERIMENT I — CHART II

AN ANALYSIS OF CHART NO. I, DEMONSTRATING THE EFFICIENCY OF  
MEDICAMENTS FOR STERILIZING INFECTED TOOTH STRUCTURES

VARIABLE FACTORS				SERIES I	SERIES II	SERIES III
No.	Medicament	Concen- tration	Time in Medica- ment	Mixed Oral Culture— Miscellane- ous Teeth	Pure Strep- tococcus Oral Culture Freshly Extracted Teeth	Mixed Oral Culture— Miscellane- ous Teeth
1	Phenol.....	5%	24 hours	30%	100%	80%
2	.....	2%	24 hours	0%	30%	0%
3	.....	1%	24 hours	0%	0%	0%
4	Formaldehyde.....	40%	24 hours	100%	100%	100%
5	.....	30%	24 hours	100%	100%	100%
6	.....	20%	24 hours	100%	100%	100%
7	.....	10%	24 hours	100%	100%	100%
8	.....	5%	24 hours	100%	100%	100%
9	.....	1%	24 hours	100%	100%	100%
10	Iodin.....	7%	24 hours	0%	0%	100%
11	.....	5%	24 hours	100%	100%	100%
12	.....	2%	24 hours	100%	100%	80%
13	.....	1%	24 hours	100%	100%	80%
14	.....	0.5%	24 hours	100%	100%	80%
15	Chlora Phenol.....	....	24 hours	100%	100%	100%
16	Tri-cresol-formalin.....	....	24 hours	50%	100%	0%
17	Iodin and Creosote.....	con.	24 hours	70%	60%	0%
18	.....	50%	24 hours	40%	40%	30%
19	.....	25%	24 hours	10%	100%	90%
20	.....	10%	24 hours	0%	100%	60%
21	.....	5%	24 hours	30%	90%	0%
22	Chloral Hydrate.....	....	24 hours	100%	100%	10%
23	Eucalyptol.....	....	24 hours	0%	0%	0%
24	Creosote.....	con.	24 hours	90%	50%	30%
25	.....	50%	24 hours	70%	0%	90%
26	.....	25%	24 hours	20%	100%	70%
27	.....	10%	24 hours	0%	100%	60%
28	.....	5%	24 hours	0%	100%	20%
29	Copper Sulphate.....	....	24 hours	0%	0%	0%
30	Iodoform (Aqueous Sol).....	....	24 hours	0%	100%	100%
31	Oil of Cloves.....	con.	24 hours	0%	100%	20%
32	.....	50%	24 hours	60%	100%	100%
33	.....	25%	24 hours	70%	80%	90%
34	.....	10%	24 hours	0%	100%	90%
35	.....	5%	24 hours	0%	100%	80%
36	Oil of Thyme.....	....	24 hours	70%	100%	0%
37	H <sub>2</sub> O <sub>2</sub> .....	....	24 hours	100%	100%	100%
38	Beta Napthol.....	....	24 hours	0%	70%	20%
39	Oil of Cassia.....	....	24 hours	70%	100%	60%
40	Dentalone.....	con.	24 hours	90	100%	20%
41	.....	50%	24 hours	100%	100%	90%
42	.....	25%	24 hours	100%	30%	100%

## EXPERIMENT I — CHART II—Continued

No.	VARIABLE FACTORS Medicament	Concen- tration	Time in Medica- ment	SERIES I Mixed Oral Culture— Miscellane- ous Teeth	SERIES II Pure Strep- tococcus Oral Culture Freshly Extracted Teeth	SERIES III Mixed Oral Culture— Miscellane- ous Teeth
43	Gaultheria . . . . .	....	24 hours	0%	0%	0%
44	Alcohol . . . . .	95%	24 hours	40%	100%	0%
45	.....	70%	24 hours	50%	100%	0%
46	.....	50%	24 hours	10%	100%	0%
47	.....	25%	24 hours	10%	0%	0%
48	Thymol . . . . .	....	24 hours	0%	10%	90%
49	Menthol . . . . .	....	24 hours	70%	30%	10%
50	Lysol . . . . .	2%	24 hours	10%	100%	0%
51	Thymol Alcohol . . . . .	....	24 hours	20%	10%	10%
52	Campho Phenique . . . . .	....	24 hours	0%	0%	0%
53	Phenol Sodique . . . . .	....	24 hours	0%	100%	0%
54	HgCl <sub>2</sub> . . . . .	....	24 hours	0%	80%	0%
55	Acid Salicylate Con Alc Sol . . . . .	....	24 hours	100%	100%	0%
56	.....	50%	24 hours	100%	100%	10%
57	.....	25%	24 hours	100%	100%	0%
58	.....	10%	24 hours	0%	100%	0%
59	Quinine Salicylate Con Alc Sol . . . . .	....	24 hours	0%	0%	0%
60	.....	50%	24 hours	30%	0%	0%
61	.....	25%	24 hours	10%	0%	0%
62	.....	10%	24 hours	0%	0%	0%
63	Na Salicylate Con Alc Sol . . . . .	....	24 hours	20%	90%	0%
64	.....	50%	25 hours	20%	100%	0%
65	.....	25%	24 hours	30%	100%	0%
66	.....	10%	24 hours	20%	90%	0%
67	Mg Salicylate Con Alc Sol . . . . .	....	24 hours	20%	0%	0%
68	.....	50%	24 hours	20%	0%	0%
69	.....	25%	24 hours	50%	0%	0%
70	.....	10%	24 hours	30%	0%	0%
71	Acid Salicylate Sat Aqueous Sol . . . . .	....	24 hours	0%	0%	0%
72	.....	50%	24 hours	0%	0%	0%
73	.....	25%	24 hours	0%	0%	0%
74	.....	10%	24 hours	0%	0%	0%
75	Na Salicylate Sat Aqueous Sol . . . . .	....	24 hours	50%	0%	0%
76	.....	50%	24 hours	0%	0%	0%
77	.....	25%	24 hours	0%	0%	0%
78	.....	10%	24 hours	0%	0%	0%
79	Mg Salicylate Sat Aqueous Sol . . . . .	....	24 hours	0%	0%	0%
80	.....	50%	24 hours	0%	0%	0%
81	.....	25%	24 hours	0%	0%	0%
82	.....	10%	24 hours	0%	0%	0%
83	Quinine Salicyl Sat Aqueous Sol . . . . .	....	24 hours	0%	0%	0%
84	.....	50%	24 hours	0%	0%	0%
85	.....	25%	24 hours	0%	0%	0%
86	.....	10%	24 hours	0%	0%	0%
87	.....	....	.....	.....	.....	.....



## EXPERIMENT I — CHART II—Continued

VARIABLE FACTORS				SERIES I	SERIES II	SERIES III
No.	Medicament	Concentration	Time in Medicament	Mixed Oral Culture—Miscellaneous Teeth	Pure Streptococcus Oral Culture Freshly Extracted Teeth	Mixed Oral Culture—Miscellaneous Teeth
88	H <sub>2</sub> SO <sub>4</sub> .....	50 %	5 min.	0 %	0 %	0 %
88	.....	30 %	5 min.	0 %	0 %	0 %
90	.....	20 %	5 min.	0 %	0 %	0 %
91	.....	10 %	5 min.	0 %	0 %	0 %
92	.....	5 %	5 min.	0 %	0 %	0 %
93	HCl.....	50 %	5 min.	0 %	0 %	0 %
94	.....	30 %	5 min.	0 %	0 %	0 %
95	.....	20 %	5 min.	0 %	0 %	0 %
96	.....	10 %	5 min.	0 %	0 %	0 %
97	.....	5 %	5 min.	0 %	0 %	0 %
98	HNO <sub>3</sub> .....	50 %	5 min.	0 %	0 %	0 %
99	.....	30 %	5 min.	0 %	0 %	0 %
100	.....	20 %	5 min.	0 %	0 %	0 %
101	.....	10 %	5 min.	0 %	0 %	0 %
102	.....	5 %	5 min.	0 %	0 %	0 %
103	Aqua Regia.....	con	5 min.	0 %	0 %	0 %
104	.....	50 %	5 min.	0 %	0 %	0 %
105	.....	30 %	5 min.	0 %	0 %	0 %
106	.....	20 %	5 min.	0 %	0 %	0 %
107	.....	10 %	5 min.	0 %	0 %	0 %
	.....	5 %	5 min.	0 %	0 %	0 %
108	Phenol, Sat.....	.....	24 hours	100 %	90 %	80 %
109	Chlorazene 4 %.....	.....	24 hours	.....	.....	.....
110	Di-chloramin-T 15 %.....	.....	24 hours	.....	.....	.....

## EXPERIMENT II — CHART IV

DETERMINATIONS OF THE ABILITY OF MEDICAMENTS TO MAINTAIN THE  
STERILITY OF THE ROOT DRESSING WHEN SEALED IN AN  
INFECTED ROOT WITHOUT PERIAPICAL INFECTION

— Sign indicates Efficiency.  
+ Sign indicates Non-efficiency.

A= Apical fourth of root dressing.  
B= Second fourth from apex.  
C= Third fourth from apex.  
D= Crown fourth of root dressing.

		Formo Cresol	Iodin Creosote	Iodin U.S.P.	Formalin Conc.	Phenol 5%	Cloves 50%	H <sub>2</sub> SO <sub>4</sub> 50%	Thymol	Mercurio phen
Hours	Teeth	A B C D	A B C D	A B C D	A B C D	A B C D	A B C D	A B C D	A B C D	A B C D
5	No. 1	+++—	+—--	++++	+—--	++++	++++	++++	++++	++++
	No. 2	+++—	+—--	++++	—---	++++	++++	++++	++++	++++
	No. 3	+—--	—---	++++	+—--	++++	++++	++++	+++—	++++
	No. 4	—---	+—--	++++	+—--	++++	++++	++++	++++	++++
24	No. 1	+—--	+—--	++++	—+-	++++	++++	++++	++++	++++
	No. 2	+++—	++++	++++	—---	++++	++++	++++	++++	++++
	No. 3	+—--	++++	++++	—---	++++	++++	++++	++++	++++
	No. 4	+—--	++++	++++	—---	++++	++++	++++	++++	++++
48	No. 1	++++	++++	++++	++++	++++	++++	++++	++++	++++
	No. 2	++++	++++	++++	—+-	++++	++++	++++	++++	++++
	No. 3	++++	++++	++++	—---	++++	++++	++++	++++	++++
	No. 4	++++	++++	++++	++++	++++	++++	++++	++++	++++

		Chloral Hydrate	H <sub>2</sub> O <sub>2</sub>	Creosote	Alcohol 70%	Chloro Phenol	Phenol Comp.	Chloro- zene 4%	Dichloro- amin-T 15%	CHECK	Phenol Sat
Hours	Teeth	A B C D	A B C D	A B C D	A B C D	A B C D	A B C D	A B C D	A B C D	A B C D	A B C D
5	No. 1	++++	++++	++++	++++	++++	+—--	++++	—---	++++	++++
	No. 2	++++	++++	++++	++++	++++	—---	++++	—---	++++	++++
	No. 3	++++	++++	++++	++++	++++	—---	++++	—---	++++	++++
	No. 4	++++	++++	++++	++++	++++	—---	++++	—---	++++	++++
24	No. 1	++++	++++	++++	++++	++++	++++	++++	—---	++++	++++
	No. 2	++++	++++	++++	++++	++++	++++	++++	—---	++++	++++
	No. 3	++++	++++	++++	++++	++++	—---	++++	—---	++++	++++
	No. 4	++++	++++	++++	++++	++++	+—--	++++	—---	++++	++++
48	No. 1	++++	++++	++++	++++	++++	++++	++++	—---	++++	++++
	No. 2	++++	++++	++++	++++	++++	++++	++++	—---	++++	++++
	No. 3	++++	++++	++++	++++	++++	++++	++++	—---	++++	++++
	No. 4	++++	++++	++++	++++	++++	++++	++++	—---	++++	++++





[illegible]





## EXPERIMENT V — CHART VII

DETERMINATIONS OF THE ABILITY OF DOUBLE SALT OF AMMONIUM SILVER AND FORMALIN  
TO STERILIZE INFECTED DENTIN AND CEMENTUM WHEN  
APPLIED IN THE ROOT-CANAL

- = Efficiency.  
+ = Non-efficiency.

A = Dentin near apex.  
B = Dentin 1 mm. from apex.  
C = Dentin 2 mm. from apex.  
D = Dentin 3 mm. from apex.

E = Dentin near crown end.  
F = Dentin from opposite side near apex.  
G = Dentin from gingival area opposite side.  
H = Culture of root canal contents.

Area	SERIES I		SERIES II		SERIES III		SERIES IV		CONTROL
		Total +		Total +		Total +		Total +	
A	++-+-+-----	4	-----+-----	1	+-----+-	2	--+-----+-	2	+++++++
B	++-+-+-----	3	-----++-+-	4	-----+-+	2	-----++-+-	1	+++++++
C	-++-+-+-----	3	-----+-+-----	1	-----+-----	0	-----+-----	0	+++++++
D	+++-+-----	4	-----++-+-	2	-----++-+-	2	-----++-+-	0	+++++++
E	-++-+-+-----	4	-----++-+-	7	-----+-+	1	-----++-+-	0	+++++++
F	+++-+-----	5	-----++-+-	2	-----+-----	0	-----++-+-	0	+++++++
G	+++-+-----	2	-----++-+-	2	-----+-+	1	-----++-+-	1	+++++++
H	-----++-+-	0	-----++-+-	1	-----+-----	0	-----++-+-	0	+++++++
Total	4 5 3 4 1 6 1 1 0 0	25	1 0 0 2 3 2 3 4 2 1 2	20	1 0 1 2 3 1	8	0 0 2 0 0 0 2 0 0 0	4	
	EFFICIENCY—69%		EFFICIENCY—78%		EFFICIENCY—84%		EFFICIENCY—95%		



## EXPERIMENT VI — CHART VIII

DETERMINATION OF THE ABILITY OF DAKIN'S RECENT CHLORAZENE AND  
DICHLORAMIN-T PRODUCTS TO STERILIZE INFECTED DENTIN AS  
OBSERVED BY INSERTING STERILE CULTURE MEDIUM

CHLORAZENE CREAM			CHLORAZENE 4%, AQUA SOL				CONTROL
Series No. 1	Series No. 2	Series No. 3	Series No. 4	Series No. 5	Series No. 6	Series No. 7	
1 Treat. 48 hours	1 Treat. 4 days	4 Treat. 4 days	1 Treat. 2 days	1 Treat. 4 days	1 Treat. 6 days	6 Treat. 6 days	
A B C D	A B C D	A B C D	A B C D	A B C D	A B C D	A B C D	
1	++++	++++	++++	----	++--	----	++++
2	++++	++++	++++	++++	++++	----	++++
3	++++	++++	++++	++++	----	++++	++++
4	++++	++++	++++	++++	++++	----	++++
5	++++	++++	++++	++++	++++	----	++++
6	++++	++++	++++	++++	----	++++	++++
Efficiency 0%	Efficiency 0%	Efficiency 0%	Efficiency 0%	Efficiency 50%	Efficiency 16%	Efficiency 100%	

## DICHLORAMIN-T

Series No. 8	Series No. 9	Series No. 10
1 Treat. 24 hours	2 Treat. 24 hours	6 Treat.
A B C D	A B C D	A B C D
1	----	----
2	----	----
3	----	----
Efficiency 100%	Efficiency 100%	Efficiency 100%

## SUMMARY — EXPERIMENT II

	5 hours	24 hours	48 hours
Dichloramin-T	100%	100%	100%
Iodin Creosote	81%	25%	0%
Phenol Compound	81%	50%	0%
Formalin	75%	94%	37%
Formocresol	56%	62%	6%

## SUMMARY — EXPERIMENT III

	5 hours	24 hours	48 hours
Phenol Compound	70%	15%	0%
Dichloramin-T 15%	35%	5%	0%
Formocresol	34%	0%	0%
Iodin Creosote	33%	25%	0%
Iodin U. S. P.	10%	34%	0%
Formalin U. S. P.	0%	34%	0%
Phenol U. S. P.	0%	45%	0%
Oil of Cloves 50%	0%	25%	0%

## THE ETIOLOGY OF DENTAL CARIES AND OTHER FINDINGS\*

BY D. M. CATTELL, D.D.S., MEMPHIS, TENN.

THE DESTRUCTION of the hard substance of the teeth commonly known as "Caries of the Teeth," "Decay of the Teeth," "Tooth-rot," etc. has, more than any other topic in the domain of dentistry, continued to excite the scientific interest of dentists and physicians for more than two thousand years. The numerous theories which have been held at different times, concerning the origin of dental decay, prove that the problem is no easy one. Not one of them has as yet been universally accepted until our own W. D. Miller gave us his findings. Among the causes which have been assigned for the decay of the teeth the following are the most important:

1. Depraved juices accumulated in the teeth.
2. Disturbances of nutrition.
3. Inflammation.
4. Worms.
5. Putrefaction.
6. Chemical dissolution.
7. Parasites.
8. Electrolytic decomposition.
9. Diverse causes.
10. Chemico-parasitic influence.

The stagnation of depraved juices in the teeth was first designated by Hippocrates, 456, B. C., as the cause of toothache. Krautermann, 1752, gives a similar explanation of caries. "The teeth are corroded by the great influx of the lymphæ acrioris. The fermento acri rodente in the hollow tooth reappears, after being removed by the application of remedies."

This theory was held for many centuries. Jourdan and Bourdet, 1757, also accepted it. When the juices contained in the vessels of the teeth are too thick, they stagnate, decay, and soon attack the tooth. (Taken from Miller's works).

So, you see, caries of the teeth is known to have existed before what we call "historic times." Caries of the teeth has been known and recognized ever since history began. It is the most prevalent of all diseases known attacking the human animal.

John Hunter, in 1778, says it is the most common disease known to the teeth and calls it "Mortification and something else."

\*Read before the Tennessee State Dental Association at Nashville, Tenn., June 17th, 1918.



Benj. Bell, 1787, Serre, 1788, Kappis, 1794, and others accuse the juices carried to or within the teeth of playing an important part in the origin of decay.

Peter Fauchard, 1728, made futile efforts to discover the "worms" spoken of by earlier writers. Pfaff, 1756, saw worms on the gums "particularly in the case of very common people who are in the habit of eating decaying cheese." He was "not able" however, to observe that such worms had produced toothache by gnawing, although he is willing to admit such a possibility.

In 1806, Dr. Fox supposed the cause to be an inflammation of the lining membrane of the pulp chamber, or what we now know as the odontoblastic layer. The inflamed area cut off the circulation of the blood in the dentin and gangrene resulted.

Thomas Bell, in 1831, considered inflammation of the tooth bone itself was the cause of decay and beginning just under the enamel then penetrated toward the pulp. The cause of the inflammation may have been a cold or some other slight disturbance.

In 1830, Koecker conceived the idea that the portion of dentin killed by inflammation was dissolved out by acids, the result of a putrefactive process.

In 1835, Robertson claimed that caries was caused by acids formed by decomposition occurring at the exact spot of the breaking down tooth structure; also, that caries always began on the *outside* of the tooth.

Regnard corroborated the claim of Robertson, namely, "The destruction of the teeth by acid decomposition."

Desirabode claimed that if acids caused caries the whole tooth would go rather than in sections.

Old John Tomes, the father of the histology of the teeth, proved dentin to be without blood circulation, hence, there could be no inflammation, but proposed the "Chemico-vital theory of decay"; that the tooth must lose all life sensation before the decomposition of lime salts. Tomes also gave us the "Transparent Zone" or zone of resistance and "Granular Matter," seen in the tubules, supposing that the pulp, in trying to head off the approaching decay, threw up breastworks in front of the encroaching enemy to prevent further ingress.

Dr. Bridgmann proposed the "Electric Theory of Decay," dissolving away lime salts by the formation and action of electricity.

Dr. Watts' theory (similar to Robertson) differed some, namely, that caries of the teeth was produced by mineral acids, developed at the immediate point where the action was produced, and did the work of dissolution while in the nascent state. The acids proposed were hydrochloric, producing yellow decay, nitric, the white variety, and sulphuric, the dark or black caries.

During the years the last gentlemen were working on the theory of the origin of dental caries, Majitot, of Paris, was working along lines

hoping to find a better cause than any heretofore suggested. He was a faithful worker and advanced many points to help out in the solution of the work in hand. Just what his conclusions were I am unable to find.

In the middle of the last century the idea of micro-organisms began to be connected with caries of the teeth seriously. After 1875 a closer study of micro-organisms and the different species or nations were studied with more distinctness. In the latter part of the '60's, Rottenstein and Leber discovered that the "Granular Matter" of Tomes and others were germs in the dentinal tubuli of carious teeth as well as in the cavity already produced. But they did not know how closely connected they were with the causes of caries. They also told of a zone of resisting calcific deposit appearing to be thrown up to prevent further ingress of the carious agents.

Later, about 1880, Mills and Underwood showed by a new staining process that this supposed "Zone of Resistance" was only a mass of micro-organisms, probably of different species, growing well into the dental tubules, secreting, as we know, acid. Dr. Koch discovered a process of staining different species of germs with different colors, and Mills and Underwood took advantage of his discovery. Mills and Underwood proposed that decalcification was the result of acids; that the acids were secreted by the germs, and the germs themselves destroyed the organic matter, using it as food. *They did not prove the proposition.*

About 1881, Dr. W. D. Miller instituted a series of experiments and proved that ptyalin had nothing to do with producing an acid condition of the saliva as had been supposed theretofore, but that micro-organisms produced the acid. Miller also proved the physiology, so to speak, of micro-organisms. *First*, that they had a digestive apparatus, or rather produced a digestive solvent; *second*, that they were nourished or assimilated food; *third*, that they eliminated poisons or produced acids, and *fourth*, that they had the power of reproducing their own kind. In other words, he proved that micro-organisms could take hold of certain materials, change the chemistry of them for their own uses and throw off again the changed material or chemical. Miller proved that the germs produced a special acid that dissolved out the lime salts of the teeth; that the micro-organisms fed upon or digested the animal or organic matrix. At last, the function of micro-organisms in the production of caries of the teeth was established; also, that the particular secretion dissolving the lime salts was lactic acid. Miller suggested that the process of enamel decay was similar to caries of the dentin and such it has been proven to be by Black and Williams, the streptococci media germs forming about themselves a gelatinous substance and becoming attached to the smooth surface of the enamel under which the lactic acid is



secreted, dissolving out the cement substance from between the rods which soon fall out, allowing ingress of micro-organisms to the dentin.

Some time ago, J. Leon Williams, then of England, read a paper before an association of dentists in New York City, on the "Pathology of Enamel," exhibiting the most beautiful microscopic specimens ever seen. They were so thin, some of them, as to represent only the thickness of a single enamel rod, estimated to be one fifty-five thousandths of an inch in thickness. Many of his specimens showed that destruction of enamel under the influence of micro-organisms was going on long before the naked eye, with the help of a fine-pointed explorer, could detect a fault upon the enamel surface. His experiments have proven much that heretofore had only been surmised. Our own Black has done considerable work in the same line and many suggestions and thoughts that have been presented by him from time to time within the later years of his life have now been proven beyond a doubt to be facts by the scientific and positive display of Williams.

#### AND SUCH IS HISTORY

With apologies to the writer, Eckerman, Ph.D., L.D.S., of Malmo, Sweden, I have had the temerity to read this paper you have just listened to. In an article that came out *after* this paper was written, in the June issue of the *Dental Items of Interest*, is a paper published which was read by Dr. Eckerman before the Scandinavian meeting in Stockholm of August, 1916. I never had seen it before, and you who are readers of dental journals, please take note of it. It has taken the pins out from under what I have just read, so to speak. He has ignored everything that ever has been found out, and after sitting down on all of our good men, he goes off on a tangent, flying his own little monoplane somewhere into nonentity.

Now let us come a little closer to the object that I have in view. We have all known about it, but we haven't been following these things very closely for years, and have forgotten many things that earlier we knew well, and this is just to remind us, or call our attention again to those facts that we learned while in college, or through the medium of the journals later.

I cannot help but feel like complimenting a certain commercial institution for giving to the world the expression, "A clean tooth never decays." This is so true and so apt. I never have heard any short expression tell the truth so vividly, and as easily to be remembered by the laity or the profession. A clean tooth never decays—at least it has yet to be proven otherwise. And if it is a fact that decay begins on the outside of the tooth and works inward, it also is a fact that if we never allow the cause, whatever it may be, to come in contact with the tooth, it cannot penetrate or enter the tooth structure. Many of us have an idea that we keep our teeth clean. We chew food, and excursions of that

food passing over the surfaces of the teeth scrub those surfaces and keep them clean. Oh, yes, if the teeth were shaped just as God shaped them first, and if they are set, one with reference to the other, in the jaw just as God Almighty put them in Adam, the perfect man, then the scrubbing of this food would accomplish its end, and the result would be that our teeth would be cleansed every day, and no decay would follow.

You who know something of the history of our ancestors, know that, as a rule, the cave man, or his ancestors, who lived on a food of different character from what we use today, did have their teeth more thoroughly scrubbed, and decay did not result as it does under our food regimen of today.

Many of us have an idea that with the tooth brush and paste, the toothpick and floss silk, etc., we keep the surfaces of our teeth clean. I sometimes request my classes in college, the next time they come in, to bring some floss silk with them (not intimating beforehand what it is to be used for). They bring a little piece, and I have them slip it between their own teeth, draw it back and forth across the proximate surface of one and withdraw it, and then hold it close under the nose. I ask them if they think that is clean? I ask them first if they brushed their teeth that morning, if their teeth are clean? "Sure thing." But after smelling, they decide otherwise.

How long would a tooth remain clean, if it were thoroughly scrubbed on all areas? Situated in the warm mouth, covered over continuously with saliva and mucous, a mixture of the two, the saliva pouring into the mouth through the ducts, from the glands, healthy, normal, perfect, the mucous penetrating from the mucous membrane everywhere, perfect, normal, the two mixing together, an examination of the two would be found normal; but it is in the mouth,—how long will it remain in a normal condition? Thirty minutes? Yes, thirty minutes, maybe,—sometimes not that long. You know we have many micro-organisms in the mouth that do their work, their bit in life, and reproduce their kind and die every thirty minutes. Others will live out their span of life in sixty minutes, then again others will live an hour and a half or two hours or more. We have a few micro-organisms in the mouth that live three hours, and by the end of that time they have done their bits and produced their kind, created or secreted the acid, and died, allowing their progeny to do the same thing the next three hours, or the next thirty minutes.

So you see it is impossible for us to keep the surfaces of the teeth clean long, or conditions in the mouth so there will be no fermentation and no putrefaction. It is within our province, however, to keep the teeth *fairly* clean.

Now let us see, what is going to happen to the unclean mouth? I say in the paper, there are certain micro-organisms that produce a



gelatinous substance; these micro-organisms are swimming around in the saliva penetrating every niche in the mouth. One eats a piece of cabbage for dinner,—a little of it stuck around somewhere. A fermentive action takes place through the influence of micro-organisms. A little piece of that beefsteak also stuck there, a little of everything that one eats stuck around there somewhere, and so micro-organisms by the million are fed up. Then some micro-organic family on a tour of discovery, moving around with an old patriarch at the head, the rest following, debouched around here into a certain position between the teeth, (illustrating), or in an embrasure of the teeth, and found a little nook or valley that seemed to be protected from the elements, so to speak, and he says, "Here we will stop; this is a good place." They unhitched their teams from the old "prairie schooners," lighted their fires, and began their hereditary work of producing their kind; they commenced their life work. Instead of chopping down trees and building houses, they created acid, which is their "bit in life," and in order to protect themselves from the elements around as much as possible in this nook, in this hidden valley, they built a fence around themselves as it were, and it was of good wire, if you will, to prevent outside influences from interfering, and then they go on proliferating their kind, and producing this acid, at that particular spot, that spot where they camped and built the first fires, that spot so protected beyond all other spots. It was just gingivally of the contact point (illustrating) and equidistant, or nearly so, between the buccal and the lingual embrasures. Protected beyond all other spots, they threw out this wire netting, this gelatinous material over themselves, and began right there to produce the acid, and the acid commenced its work immediately upon the cement substance between the enamel rods, and that cement substance, being composed of the same material that the enamel rod is, but a little different mix, a little thinner mix, it dissolves out readily between the enamel rods, and some of the enamel rods then become loose and fall out, so to speak, or fall together, leaving a gateway through the body of the enamel to the dentin, and as I told you in the paper. J. Leon Williams has shown distinctively and positively that some of these enamel rods can fall out, or fall together, and leave quite a hole there, large enough for the millions of micro-organisms to penetrate, and yet not large enough for the dentist, with an explorer slipping over the affected area, to find. Now the enamel rods themselves in time will be dissolved, giving greater room for the ingress of the micro-organic growth. So far the solution or dissolution of the enamel has been chemical or mechanical on the part of the micro-organisms, but now, when they reach the dentin, there they discover tubes, (tubuli), that begin at the circumference of the pulp, the surface of the pulp, penetrating outward, sending out lateral projections, and we have a great net work of them near the dento-enamel junction, so that the

lactic acid reaching these tubules penetrate one, two, three or more and flow into the tubes a little way by capillary attraction, penetrate these tubules, soften the structure of the surface, and work back and forth until a wide space is opened up just under the enamel, but pointing always toward the pulp, in fact, cutting or dissolving the dentin in the shape of a cone, with the apex of the cone toward the pulp and the base following the line of dento-enamel junction. Now the dentist's attention is called to it, and he finds that little hole cut through the enamel,—it has by this time gotten large enough, with a little discoloration around it, so he finds it readily, and he cuts a little opening, prepares a cavity wide enough to take in all that decay, and places a filling. We use to fill these cavities the very best that could be done; we filled them with gold in a way that lasted, sometimes, for forty years, and yet it wasn't properly done.

Listen, for directly again an old patriarch, with his family following, hunting a good place, found that same spot. Oh, it had been swept over once by a cyclone and plated with gold, but he still found in it a nook in which was protection,—he stops there with his family, begins again, and does the same trick over again on that beautiful smooth gold filling. It didn't make any difference to old patriarch whether it was gold or silver or enamel; all he wanted was to reproduce his kind. The formation of the acid was secondary. Oh, yes, it was formed, but there didn't happen to be anything nearby for it to dissolve. So that family grew and grew and multiplied like the families of old, and they took in the neighboring valleys and the neighboring area until finally they spread just beyond the area occupied by the gold filling and reached the enamel again, spreading out, extending their wire fences, so to speak, wider and beyond, taking in more area, and finally it was spread outside the gold filling, and then that incidental formation of acid began its work on the enamel, the same thing, the same way, that was done in the original case, and we have "secondary decay," as we call it. And so we see the dark line, the "black ditch." Now, mineral acids produced by the decomposition of the foods we eat,—candy, molasses and honey, penetrate these little, open, broken places in the enamel, and having reached the dentin, a toothache follows, an irritation, and the patient's attention is called to it, and he seeks again the dentist, the same man, generally, and he, the dentist, sees that decay around and undermining his filling.

Now the question comes to the dentist, "Will I take that out and do it over without charge? Was it some fault of mine, or is it something that I have no control over?" So there it is, a see-saw between his conscience and his pocketbook, or maybe his license. But finally, however, he decides to cut it out, prepare the cavity once more, and insert a



filling, and then he will compromise with the patient. "Charge you half price." Time goes on, and the same thing happens once more, and the patient returns with caries going on buccally and lingually. And now he is tired, the dentist is; he don't even want to see that patient. He don't care about even a *compromise* again. He wants his full price. He tries it on the patient, who objects, and there is friction. Good-bye, patient.

Well, the other man, on the other side of the street, that has his office just across there, when his patient came to him first, he cut the margin of the cavity beyond the area of liability for the micro-organisms to again take hold and do their work. In other words, he extended the outline of the cavity into areas that were kept clean continually by the scrubbing of the food in the act of mastication, slipping over the contact point, sliding over the surfaces of the teeth, and down the embrasures, cleansing as it went. He did it right the first time. He knew what would happen if he failed to extend the outline properly. Oh, yes! some of those old-time gold workers that were working gold before Miller taught us the cause of caries of the teeth,—they didn't know why the thing was going on, but they knew by experience that if they didn't cut and extend the cavity buccally and lingually, for the sake of the future preservation of the tooth, they would have to do it over; so they did it the *first* time, and simply by experience produced a cavity that we say now was done under the idea of "extension for prevention." When Miller came along he told us what happened, and Black explained it to us so clearly, advocating all the time that the outlines of the cavity be laid just beyond the "area of any liability" for the micro-organic life to fasten itself upon the tooth. What may be said of a proximal cavity may be said as well of a buccal or a lingual cavity, or anywhere on the tooth surface. Now that it has been demonstrated so many times, since its first promulgation,—first, Miller to tell the scientific causes of decay, and Black to tell us how to evade the consequences by having the cavity's outline placed right, there have been a great many schools of divers men who have preached this and who have preached that, and yet I want to tell you that the principles laid down by Miller and Black and Williams never have been disturbed. They stand today just as boldly, as positively and truthfully as they did the day they were first uttered. Until we, as a profession, get down and dig and study and think out in our own minds about this decay, how it happens, what the result will be, we never will make a good-shaped cavity. Oh, yes, students may do it because some instructor standing over tells him to, and makes him do it, or he won't get any credit. So long as the penalty hangs over them they may do the right thing; but the minute they go out for themselves in practice, with no penalty hanging over their heads,

they will not keep it up, *unless they understand the whys and wherefores.*

Here is a question that is often asked: "Why is caries more active in some mouths than others?" Well, I have sometimes answered, "Why does one's breath stink more than others?" The better answer is, "Why are the juices of the mouth in one individual more nearly normal than the juices in another?" The normal juice of the mouth is bactericidal. That means good healthy saliva will kill all acid-producing micro-organic life that appears in the mouth, while the other fellow's saliva will not, and so the micro-organisms do their work. We all know that just before a meal the saliva is more acid, and just after a meal it is alkaline, slowly becoming more and more acid. Why? Because just after a meal the glands have been at work excreting the saliva freshly into the mouth, the older juices have been swallowed and fresh is supplied until the contents of the mouth juices generally are more normal; but the longer the saliva remains in the mouth, the greater the putrefaction of the particles of food adhering to the teeth goes on, the more acids of different kinds are formed, the more micro-organic life is produced.

Another one has asked, "What changes take place when caries cease in mouths heretofore predisposing,—what changes take place where, in a mouth today, active decay is going on, and in time the decay ceases, and it becomes much less active?"

This is a pretty big question, and yet in a general way it is easily answered, or has been by our scientific men. It all depends upon the condition of the mixed juices of the mouth. You remember a few years ago, out from the East came the idea of feeding the body drugs so that we always would have a normal or alkaline saliva, and inhibit the action of the micro-organic life. But it didn't last. But we do know this, that micro-organic life can be held in abeyance if we have the normal alkalinity of the juices in the mouth that will control them. You who believe in patent mouth washes, and are trusting to so-called antiseptic mouth washes to hinder the growth of bacteria, trust in vanity. Oh, yes! you clean up for three minutes, maybe five minutes, not longer, and in fifteen minutes it is as bad as ever; you cannot hold it there all the time. Better, a great deal, take some good clear water and rinse the mouth. It is more solvent than those patent medicines. We haven't anything that is a greater general solvent of matter than water. If you want to help it, put a little salt in it, and have a saline solution; the best mouth wash that I know of, and the cheapest, is just salt water—"normal salt sol."

Again, "Are there recognizable signs by which we can know whether or not caries will cease with advancing age?" Years ago we would have said, "there are not;" today we say, "there are signs." I



do not pretend to be an expert, yet I know men that are expert enough to judge, and from my own experience I feel that I am able at times to judge whether an individual is ready to pass beyond the active stage of caries. "What can we do to help to bring about this stage?" Black and others have very well said that first of all was keeping the mouth as free from extraneous matter as possible, prophylaxis, which, in a sense, is prophylactic. Then, again, it is claimed by some that a change of diet will change the condition of the saliva. We all know how quickly some of the juices of the body are changed. We all know that if a nursing mother has gone through a spell of sorrow, or even intense enjoyment, any great shock, physical pain, or otherwise, the milk will sour in the breast, and the child nursing immediately or soon after will have the colic. We know that the urine is changed within an hour from a dark rusty color to one as clear as spring water, or vice-versa. What has happened? Something has happened to the juices.

We know that many times when our patients take the chair first their saliva is sweet, it is not stringy, but normal. We work on them for half or three-quarters of an hour, and it is thick, it is ropy. You can catch it with the fingers and pull it out by the foot before it will break off,—a great change. You also know that saliva, sweet when the patient first took the chair, becomes very odorous later. You can smell it. It smells differently. I have had two cases in my life that have smelled as much like salt mackerel as it is possible to smell, and yet I know that the patient had not eaten any mackerel for a week, and it was not noticeable on first taking the chair.

Now then, the juices of the body are changeable, and readily so. If we can get the juices of the body, the juices that pour into the mouth changed, if we can get them in a bactericidal state, we will have checked the rapid process of caries. Now I am going to surprise some of you, and I am not a Christian scientist either, by any means; I once said I thought they were the biggest ethical liars on the face of the earth. I am not quite ready to take that back yet, but I will tell you this: That I would rather have for my patients Christian scientists, so-called, than any other class of dogmatic fakers. Why? Because their saliva is better, more normal. If a dentist were to go at some of you in a chair in a rough, ugly way, and arouse your temper, irritate your brain, get you all worked up, nervous and fidgety, and frighten you, he would have hard work to serve you; and the juices of the mouth would become viscous directly; but if you show that smooth, even, easy disposition, not allowing yourself to be disturbed, never getting hysterical, and intimating you like such work—your saliva remains sweet. The man or woman who holds himself in life clear of all hysteria, non-excitabile, smooth and easy in his mind, and not fidgety in his nerves, will find a better saliva.

more normal, less viscous, and one that comes nearer to being a germicide, than the man who gets all fussed up, upset, fidgety and nervous, and all that sort of thing. So, let's all be good. I thank you.

718 Union Ave.

#### DISCUSSION.

DR. HENRY W. MORGAN: The paper is truly characteristic of Dr. Cattell. He has gone back into the ages and reviewed the literature of the past, and brought down to us many theories that were entertained—early theories of caries, the earliest mention of which, it seems, was Dr. Black, whose writings you will find photographed in Volume No. 1, beginning the Chapter on Dental Caries. He recounts and quotes from an observer who tells us that it is the decomposition of the food that produces the cavities that we find in our teeth. That same man, writing in 1830, also made note of the fact that gold foil was used for the filling of the teeth. He quotes somebody who had written two hundred years before, and these things seem to have been known to him also. So when we take a survey of the past, we find that we haven't got very far from it yet.

I was pleased to hear Dr. Cattell say he knew but little. I am here to say that I feel that I know less than he does about caries, but I do want to say this, i. e., we may theorize and sermonize all we please, but there is one feature of caries that I believe our investigators have not been able to drop the plumb line deep enough to fathom, that is, when we come to study the beginnings of decay, all we have as a guide is the clinical observations that we make at the chair, and from day to day evidence there we find that certain conditions will lead to certain defects and results, but as sure as we stand here, the character and the chemical nature of the saliva hasn't all to do with the fact that in one mouth there will be numerous cavities of decay, and in that same mouth at another time there will be a cessation of it; there will be a period of immunity; in the mouth of one individual in a family there will be a splendid set of teeth, and in the mouth of a brother or a sister a few years younger or older they will have none scarcely. There is a condition of this body that maintains an equilibrium of vitality, that resists, and we have got to reach down to that vital influence that controls that saliva, that makes this difference. Therefore, when, years ago, after a lengthy correspondence with such men as Atkinson, and Taft and Andrews and others, I printed as a definition to give to my boys in school: a chemical, vital parasitic disease. I believe there is a vital element in it that we haven't been able to reach, and this vital element accounts for those things that have been enumerated by Dr. Cattell.

Without speaking of patent mouth washes and tooth pastes, we know after all, the best means of keeping the teeth clean is proper mastication. The man who swallows his food in a hurry, and does not make use of each and every tooth in his head in the mastication of his food, getting the cleansing influence at least over the exposed surface of the teeth, has not as yet appreciated what is the most valuable means of keeping the teeth clean.

Dental caries, Dr. Cattell, long after you and I have laid down our life's work, will continue to be a puzzle to man. It is one of those things that is constantly presenting new phases. I am glad to say it was an American who said that caries was something going from the outside in, and not something that grew inside the tooth and worked its way out, as some of the previous writers have stated.

I thank you for listening to this incoherent discussion, but it is truly impossible to discuss as characteristic a paper as this. The paper is a very valuable one, and very timely.

DR. J. P. CORLEY: I want to ask Dr. Cattell, if the dentist is the custodian of his clientele, isn't it his first duty to teach his clients to render immune all the surfaces of the teeth, not by some artificial substance, as gold; could not these valleys and these niches be reached and cleansed? If not, I say they should be cut out, but the plan of



extending the cavity to the point where the excursion of food will keep it clean seems to me to be utterly ridiculous and absurd. If this is our plan, then, for God's sake, let us take out every tooth that comes to us, or cut off their proximal surfaces. Why is it that the dentist is more appealed to by an extended cavity than he is by the admonition to persuade his patient to keep these surfaces clean by artificial means? I would like to have that question answered. If it is the logical thing to do to extend all our cavities, and extend the surfaces which are not immune, as they say, to the point of immunity, why not adopt the slogan of *sanitation for prevention, instead of extension of cavity for prevention?*

DR. TEMPLETON: I would like to answer the gentleman. I try to exercise my common sense, my common judgment, in preparing the cavity. I remember very well what Dr. Morgan's father told me when I was in college. I was preparing a cavity, and he said, "Son, cut it out like you were going to put a screw in a piece of wood, around the top of that, so things won't hang around there and start decay."

I find that in those old cavities that I cut out that way when I was a boy, the filling stayed in. I had a brother who was in school, in the medical college, at the same time. I filled several cavities for him, and Dr. Morgan and I looked at them, and they are in there, just as good as ever. I have filled thousands of them since, in the same way. I think it is due to my cutting out the tissue far enough back for the decay not to recur, and I try to follow what my judgment dictates as to how far back.

DR. MORGAN: My father called it countersinking. We call it beveling the cavo-angle now, and mean exactly the same thing he did.

DR. J. P. CORLEY: I want to thank the essayist for his paper, because I enjoyed it. It is a contribution to dental science, and in my agitation, and under the influence of my acid saliva, I neglected to do that.

DR. HENRY W. MORGAN: Nobody seems to want to answer Dr. Corley, so I would like to answer him by a quotation from a paper I picked up the other day printed in 1868, a quotation from Wm. H. Morgan, "I have many times tried to clean a set of teeth, and I have sometimes done it fairly well, but I don't believe that I ever did it perfectly, and I don't believe any other man ever did it either."

DR. CUMMINS: As decay comes about from one cause or another, and there is real, urgent need of some means of prevention, and realizing at the same time the ever increasing desire of the laity at this time to want to know more about it; what shall we tell them about preventive means? Patients ask: "What tooth paste, or powder or mouth wash, Doctor, do you consider best for us to use to keep down this decay, to keep the mouth in the healthiest condition and best shape?"

One firm claims that the gummy deposit that causes caries is albuminous, and that, they have a preparation with pepsin in it which brings about a natural digestive action that this pepsin which cleans it off in a scientific way is harmless; another claims great things for a preparation with soda in it, another with acid, and another neutral, and all these things—what answer are we going to give to those patients as to what is best for them to use?

They are showing much more interest at this time, it seems to me, than at any time before, and this interest is increasing very rapidly, this interest of the laity in regard to care of the teeth. Since this great agitation in the last two or three years over focal infection, they are coming to us much more, and being sent to us by the medical profession, and we are called on every day a number of times to give advice along this line.

In answer to these many questions and inquiries, what are we going to give them for an answer? It strikes me that we ought to get together on some advice along this line, and agree on the best advice that could be given to them, instead of just giving some haphazard answer, and confessing in that answer that we do not really know what to tell them. What answer shall we give to these patients? What is best? I would like to hear some suggestions along this line.

DR. FINNEY: I think we should study these cases and if they need a certain mouth wash of any kind, we should know it, and be ready to prescribe such a mouth wash as we think best for each case. That is the way that I have found it in my practice. I believe that this is the duty of the dental profession—every case won't indicate the same treatment or remedy, and I think we should be governed according to the physical condition of the patient as to what we should do, and what we should prescribe.

DR. D. M. CATTELL: (Closing.) Tooth pastes and what they will do is not in the paper. It was only an incidental word that I dropped about mouth washes. We can't go into the subject of tooth paste today, for all there is a lot there that needs discussion; nor can we go into the preparation of cavities. All I wanted to show is that micro-organisms will fasten on to tooth structure, some area, I don't care where it is, provided it is protected. If it is cleansed by the excursions of food, they will not lodge there, and in the chewing of food if the food will scratch over or scrub, as I call it, any surface of the tooth, it is then immune from the formation of these gelatinous plaques.

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### A NEW LOCAL ANESTHETIC

BY WALTER WOODBRIDGE, D.D.S., DETROIT, MICH.

The scarcity of the German product (Novocain) that formerly was used extensively in this country as a local anesthetic prompted me to make a search for a possible substitute. I found Apthesine not only as good in every respect as Novocain, or any other similar synthetic preparation, but in some respects it appears to be superior. Owing to the fact that it originated and was put out by an American pharmaceutical house, my interest has been materially increased.

I have used almost exclusively the tablets containing  $\frac{3}{5}$  grain of Apthesine and  $\frac{1}{1600}$  grain of Adrenalin. One of these tablets dissolved in 60 minims of normal saline solution makes a 1 per cent. solution of Apthesine and  $\frac{1}{100,000}$  of Adrenalin. While this represents a very weak solution of Adrenalin it seems to be sufficient to give the most favorable results in localizing the anesthetic effect of the Apthesine, although it does not produce the circumscribed areas of congestion followed by sloughing that sometimes follows the use of stronger solutions. Where the local application of a  $\frac{1}{1000}$  solution of Adrenalin is desired following operative work it is preferable to use Adrenalin alone.

As a routine local anesthetic, I consider Apthesine for all practical purposes the equal of cocain with none of the ill effects of the latter. It blanches the mucous membrane and paralyzes the peripheral nerve endings, making extractions painless except in cases where the tissue is loose and spongy which does not permit of sufficient absorption of the solution.

I have put the Apthesine and Adrenalin solution to a very severe test while making extractions. As an example, I had one case in which six incisors were removed. The gum was firm and healthy. The extraction was painless and no unfavorable after effects were noted.

In another case of extraction of the left upper first molar the gum was loose and flabby, it was not possible to obtain perfect desensitization



and there was slight pain. It must be understood, however, that it was not the fault of the product but on account of the condition of the tissues which made complete absorption impossible. If an attempt is made to produce complete anesthesia in such cases there is great danger of sloughing due to pressure necrosis in tissues that are already badly congested.

In making an extraction of several bad roots, with local infection, no pain was experienced although there was some soreness following the operation, due entirely to necessary traumatism to the gums in making the extractions.

In one case of unusually difficult extraction, consisting of left upper bicuspid and left upper wisdom, there was no complaint of pain, no sloughing of tissue, and a rapid and complete healing followed.

I wish to refer to another case of extraction of two molars on upper right side and two upper left. These were all very difficult extractions. Evidently there was a complete desensitization as the patient did not complain of pain. There were no ill effects whatever from the injections.

These references are merely cited as an example of some of the uses that I have made of Apothesine-Adrenalin solutions. If my results are verified by other dentists the profession undoubtedly will welcome this new local anesthetic.

398 Baldwin Ave.

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### SERVICE\*

BY DR. BLAIR, EL PASO, TEXAS.

**F**OR A LONG TIME but particularly during the preparation of this paper I have been deeply impressed with the importance and the advantages of organizing an association. I am sure if we got together and each do our part to the best of our ability, not only in our meetings but in our offices, in our talks to parents and to children, and to the man on the street, in fact on all occasions where the opportunity arises, to become enthusiastic over the importance of the service that we as dentists do for the health of the community.

The dental profession is not now what it was in the past. The necessity and the benefit accruing from the care of the teeth, are now becoming known to the medical profession and to the world at large. All are now appreciating that we are of a great deal more importance than we ever dared imagine before, as we now realize that a great many of the ills of mankind are a direct result of lack of care of mouth and teeth.

It is hard to admit that in the past the aim of the average dentist was to extract the most money with the least amount of labor; but even so, our crimes were those of ignorance and not of malice, as we were

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\*Read before the Southwestern Dental Society.

doing the best we knew how ; but with the new light that has been thrown on our work, and the new importance attached to it, we should look back at our old mistakes and profit by them, then forward and grasp every opportunity for bettering ourselves as practitioners and co-workers with the medical profession in health welfare.

Let us not delude ourselves, that we have done everything we owe the profession when we refused to put gold crowns on incisors, and when we refused to extract six-year molars from a squirming youngster and instead of that have unprofitably and laboriously filled them, and when we do not call amalgam fillings, platinum, or porcelain teeth, ivory, because we do owe the profession and the community the very best that is in us, for do not the people come to us as experts in our line, expecting us to know the most recent findings in dentistry, and do as much for them as any one else could do for them.

We do subscribe to the dental journals, and for what reason? To learn what the other fellow has found out, from his study and investigation and often costly experience, expecting to learn, possibly, how to do something easier or better for our patients; but are we merely in subscribing to the journals, doing nothing for the other fellow? Teaching him to do anything better, easier or with greater good to his patients?

Let us then get out of our various ruts, which are growing deeper ahead of us year by year, and by getting together and letting the other fellow have the benefit of our experience and methods, and by seeing his methods we will mutually profit as practitioners, for our work will be lighter for we will be helping to bear the other fellow's burdens, and he will help us to bear ours.

In all successful businesses the three greatest factors that have joined to gain results have been, *Organization, Co-operation, and Efficiency.*

These three factors have enabled Germany in the last 50 years to become a power which is defying the world. Where would she have been in the present struggle without the wonderful, organization, co-operation and efficiency that have become an inherent part of that wonderful power?

What makes all big business — railroads, steel industry, smelting and refining, and the oil industry—a success? Is it not in every instance directly attributable to these three great factors—organization, co-operation and efficiency? The first factor in success, before co-operation is possible, is a thorough organization. Every organization demands a head, I believe we have made a wise decision in our president for the present, the sacrifices he made in order to get this association started, of time, energy, thought show his unselfishness toward us, and his desire for a closer relationship of the practitioners of this section. Surely it is now up to us to make his dream come true, and by our united efforts we can accomplish anything. The head cannot do all the work; and so we must



nave committees to assist him, and these committeemen must be willing to make some sacrifices of time and must study the work of the department of which they are the heads.

I have not time in this limited paper, nor have I the ability or the knowledge sufficient, to go into all that is required in the thorough organization of this association, but I would like to make a suggestion or two.

One thing appeals to me, that El Paso is not represented in the great movement of Oral Hygiene; what are we doing for our public school children in the way of establishing clinics? Can we not do something in teaching them prophylaxis? Other communities are deriving great benefits and the profession material results, through the willingness of the members to visit the public schools and give half-hour talks on the care of the teeth. Cannot we adopt a similar campaign, and also begin work with the end in view of starting a public clinic? El Paso is a very rich city and there are many people here who, if it was brought to their attention in the proper way, would be willing to contribute largely to charity that means health to thousands of our poorer children.

How much sanitary or unsanitary dentistry can the man have, or his wife or children, who is earning ten, twelve, or fifteen dollars a week? These people suffer from septic poisoning due to diseased teeth, yet dental operations are out of their reach. Cannot we give a very small part of our time toward this charity, appreciating the great good it will do to the community and the educational effect it will have on those who are able to pay for proper care of their teeth? This will be a direct benefit to us.

Another thing that has struck me as a positive necessity and one that we could control and handle very easily would be a co-operative laboratory. How often we have all wished there was a good dependable laboratory within phone call, how often have we all had to work our heads off or turn down a profitable piece of work because of our inability to finish it in time? There is money in a laboratory properly run, and there are many of us eager to give it work; the profits from this could be either turned into the association for banquets or charities such as clinics, or could be made a dividend to those who give it patronage.

There are many other things of course that have occurred to the rest of you, many much more important possibly than these, but these are two of my pets. Can we not have monthly meetings for the reading of papers and discussions thereof, and have our secretary give a synopsis of the subjects discussed and particularly the roll call of members present to the local newspapers, that our patients may realize that El Paso dentists are striving to be up to date. This has proven in other places a tremendous leverage toward regular attendance.

The second factor in success is co-operation, and the first step in co-operation is acquaintance, let us get acquainted, not just to say good-

day, or to go and have a drink together, but to see the good in the other fellow and to learn his viewpoint, to know his ambitions and help him when we can; to make allowances for his weakness, his differences in environment and to be his friend. If we become acquainted we will find a great deal to admire in every man, no matter what his faults, if we but get close enough to him we will find virtues far in excess of these faults, and possibly even our own virtues. He will not be able to help us unless he gets acquainted with us, finds we really are human like himself, and have a family and a future to think of; he must find out by meeting us on the level, that we are not nearly as cruel as careless, or as extortionate as Mrs. Jones told him we were, when she changed dentists, or that we would steal candy from a kid as Mrs. Smith said we would. Then fellow members let us get acquainted with each other, and try with all our hearts, through this acquaintance to get a knowledge of what the other fellow is doing or trying to do and help him do that thing, and he in that time will have gotten our viewpoint and will be assisting us toward our ideal.

The second step in co-operation is appreciation.

Until very recently when a doctor sent a patient to us, it was to "have a tooth extracted." Now they are sending us patients to have their teeth examined, and then tell them what we find; then they are able to go on with the treatment, if it be necessary, but in a great many cases they will admit that the cure will follow when the direct cause which we so often find in the mouth, has been removed. Why is this great change in the attitude of the medical fraternity? Because they now appreciate that we are the specialists who, as Dr. Mayo expresses it, or rather admits, must take the next great step in preventive medicine. We as dentists have been as much in the dark as the doctors; but now what a wonderful broadening of our field; we have today the largest undeveloped specialty in the world; we cannot at present appreciate the magnitude of this field, both professionally and financially, for the dentist who will give all his time, and all his ability to perfecting himself in his profession. We are too far away from any other association, to derive the benefits that the dentists in more thickly-settled communities enjoy, so we have in a large measure to depend on our own experiments and profit slowly by our own mistakes; but if we will co-operate and help each other, we can avoid a great many of these mistakes by the experience of one another.

Let us then, fellow members, appreciate that isolation forms a rut; let us appreciate that we as individuals, do not know it all; let us appreciate that things that we cannot do successfully, our neighbor is doing very successfully, and that he is willing to show us how he succeeds; let us appreciate that we must be evangelists, that we must talk to every one, on every opportunity of the necessity of care of their teeth, that the care of their teeth is care of their general health; let us appreciate that the



leading scientists now agree that rheumatism, nearly all cases of malnutrition in half-grown children, certain kinds of heart disease, and lately it has developed that mental deficiency is often in a large measure directly due to bad or misplaced teeth. Statistics also show that from 15 to 18 per cent. of the inmates of insane asylums, are there through pressure caused by impacted third molars. Dr. Murphy said that fully 50% of all appendicitis was directly caused by infection from teeth and tonsils.

The third factor in success is efficiency. The day each of us was handed his diploma, we thought that the world was ours, that professionally and financially we were already a great success, but we now know that that was all a mistake. Professionally it was a crime to turn us loose on a poor and unsuspecting public; financially, well some of us have cars on the installment plan, and others have very heavily-mortgaged homes. Why? Because we have not been as proficient in our work as we should have been. We have gotten into our little rut and have stayed there, while other men have been doing things in dentistry, and are getting ten times for their work what we in El Paso and community are, because they are more proficient in their work. Gentlemen it takes time to be proficient, but I believe and know that every person is willing to give us proper remuneration for time spent, providing, they are convinced that we are spending time in order that we may give them something better than we could by being in a hurry.

We all make mistakes; I do; none of us have sprouted wings; but, fellows, let us do our best to become better dentists. Let us study; let us take more time to every piece of work; let us try to make each piece of work better than the last; our patients will appreciate it. Let us try things that the other fellow has been and is making a success of, and do not turn anything down because we do not make a success of it the first time, for, in all probability, when the other fellow first tried it it was not a success for him, but by sticking to it he became proficient. We have all tried things and have made failures of them, only to find we had left out some apparently trivial point in technic, that when comprehended and used made that one-time failure a big winner for us. Let us quit carelessness, and in everything we do let us do our very best; let us one and all strive to do something in this year for the good of dentistry, if nothing more than to do better work for our patients. Our Organization will be a failure and will not do any of us the good it could, if we do not try to help, by trying to improve our work.

I would like to have our Association noted all over this country as an example of men who have organized for the good of themselves and the good of their community, and the good of the profession generally.

I would like to have this town noted for the best dentists, for the best class of work turned out generally, and for the most sympathy among our

members of any place in the U. S. We can do this, and we will find it easy to do if we all try with all our hearts to do our best. Any man who is satisfied with what he is doing, and will make no effort to try to become more proficient and try to become more enthusiastic about his work, has no business here; he will be a drag to us all, and the sooner he quits the better it will be for all the rest of us, and will do him no harm.

Realizing my own inability and to a large extent my own shortcomings, I have permanently adopted Abe Lincoln's motto, which is:

"I do the very best I know how—the very best I can do; and I mean to keep doing so till the end. If the end brings me out all right, what is said against me will not amount to anything. If the end brings me out wrong, ten angels swearing I was right, would make no difference."

Now I am going to tell you all something personal. If I find out that any one of you fellows is charging more for a given piece of work than I am, I am going to take a day off and find out why. What you are doing for your patient that I do not know how to do, in what way I am falling down, that I am not giving my patients their money's worth; for if you are spending more time, and making a more perfect restoration than I am, I am not giving my patient value received, for the best work that can be put in is the only kind of work worth paying for, and poor work is dear at no cost.

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### PRESIDENT'S ADDRESS\*

BY Z. N. WRIGHT, D.D.S., DAYTON, OHIO

**I**N THE CONVOCATION of the fifty-third annual meeting of the Ohio State Dental Society, we are reminded that during the past twelve months the most brilliant pages of the world's history have been enacted, and shining out from those pages in letters that kindle anew the glowing fires of patriotism upon our heart's altar, is the record that has been written by our own great and glorious United States of America.

As we assembled one year ago, there was a spirit of anticipation amounting almost to anxiety, as we listened to the urgent appeal to conserve every ounce of necessary material, and to mobilize every item of our resources to be used by our Government against the enemy of the rights and liberties of all mankind.

With almost breathless expectation we sought the latest news from the front, and read with deepening anger and disgust the arrogant German war lord's boast of ultimate victory.

Then followed days of gloom when it seemed as though he might make good his boast, as dispatch after dispatch brought the intelligence

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\*Read at the Ohio State Dental Society, Dec., 1918.



that he was pressing back the allies upon all fronts, and that his propagandists were succeeding in their work among all nations.

Across the waters came the imperative call for immediate help, and our answer was an ever increasing din of clanking metal and roaring furnaces, while from our eastern ports went forth an ever increasing stream of supplies and munitions of war, and bridging the Great Atlantic, our transports safely carried our millions of troops, the best and bravest that ever went forth to battle.

Westward and southward rolled the terrible conflagration, until it seemed as though the allied lines must break, when suddenly the world was thrilled and electrified by the news that the enemy had come in contact with our own brave boys who would not retreat.

Fierce and desperate was the struggle, and many a noble American boy made the supreme sacrifice; but in that selfsame hour the demon of autocracy received the death blow that sent it reeling backward, supine before the renewed strength and courage of its enemies, to absolute, utter and hasty defeat.

The eye of the world is upon the United States of America as never before upon any other nation, and it is up to our people in every vocation whatsoever, to lead out and show the way for better living among all the peoples of the world, in the days of the readjustment, and the reconstruction which are to follow.

Our government is rich in natural resources, rich in man power, rich in ingenuity, with a courage that is indomitable, because every man is his own sovereign, the architect of his own destiny, as no other men or people can be, living under any other government now existing.

We must awake to our powers and responsibilities; our profession must keep pace with the improvement that is taking place in all other avocations. Our dentistry must be a superior dentistry.

We of the dental profession may look with a great degree of pardonable pride upon the part we have taken in helping to make the world safe for democracy. The year has seen the practical application of the service dentistry is capable of rendering to the United States Army, and that it has proven conclusively its worth is evidenced by the greatly increased recognition and representation that dentistry has recently received in the army and navy.

The dental profession has contributed no small part in presenting to the world an army, the like of which was never known before. The United States Army stands as a model of physical perfection, unparalleled in the annals of history, and the condition of the teeth of our soldiers is the envy and the admiration of the world.

This is due in a great measure to the disinterested efforts of such men as our own Dr. Homer C. Brown, who has given so much of his

personal time and energy in securing the enactment of the effective dental legislation that has given dentistry such an important standing in the United States Army and Navy.

The dental profession owes Dr. Brown a debt of gratitude that it never will be able to repay for his untiring efforts in bringing to a successful conclusion the movement to have the proper representation in this important field of government service.

Without our associated and organized efforts we could not have given this important aid to our government. Had it not been for the perfect working condition of the great machine the dental profession has built up in the reorganization of the National Dental Association, in which also Dr. Brown was very active, we could not have gotten so many men interested in the work of the Preparedness League of American Dentists, which has done so much to prevent the suffering that would have resulted, had our boys been allowed to go to the front without first having been made dentally fit.

This meeting finds us standing upon a little higher plane than we were a year ago;—higher in our field of responsibilities, higher in the confidence we have in our ability to achieve, and I trust, higher in the estimation of the other professions, as well as in educational attainments, which is the goal toward which we are all striving.

If the cause is worthy, the more we study it the greater will become our fascination for it. The more we labor for a principle the greater will become its worth to us and the more we will treasure it.

The poet receives an inspiration from the purple-tinted clouds of sunset, the twinkling stars of the evening, the cattle upon a thousand hills, the image of some one he loves, and the world is enriched by the magical transformation of the inspiration of his soul into a beautiful poem that influences and modifies the thoughts of men throughout countless generations.

The musician is inspired by the song of a bird, the rippling brook, the thunder's roll, the breaker's roar, or the voice of a maiden fair, and the symphony of his inspiration echoes and re-echoes throughout the length and breadth of the whole world, making melody in the hearts of all who understand.

The artist is inspired by the beautiful landscape, the silvery lake, the cloud-lit sky, a beautiful face, and gazing upon his handiwork, the inspiration of his soul passes on to us and through our thoughts and actions, on and on in ever-widening circles until the end of time.

The possibilities of an inspired dentistry are just as great, yes, greater, than in poetry, in music or in art, for the inspiration of dentistry not only adds to the pleasure and sentiment of living by its aids to comeliness of face, enunciation of speech and resonance of voice, by cor-



rect restorations, but it adds to the comfort and satisfaction of living through the relief from pain and the restoration of health. The possibilities of an inspired dentistry are unlimited in its results for good.

Inspired dentistry has given to the world painless surgery through the demonstration of general anesthesia. It has perfected the technic of conductive anesthesia. It is giving to the world a better condition of health by the publication of the truths that are being made clear through the research work on focal infections and the improvement in root-canal technic, and the hystological study of the tissues, in their relation to the activities of micro-organisms.

It is highly gratifying to know that of all the more recent great forward movements that have placed the dental profession upon a higher plane and has caused it to become a truly beneficent factor to society, Ohio has furnished the brains and the incentive for the initiating and carrying them to a successful conclusion.

There never was, perhaps, any movement instituted by any body of professional men that was so far reaching in its results and became so conducive to great general good, as the Educational Oral Hygiene movement, for which so much credit is due to Dr. W. G. Ebersole.

It was the first real awakening the laity ever had received concerning the importance of the teeth as a factor for maintaining good health. For the small amount of educational work given to the public much has been accomplished in securing dental clinics in the public schools, industrial plants and public institutions, and the dental profession has received in return a thousand fold.

In the founding of the Research Institute of the National Dental Association, not only the dental profession, but medicine and surgery as well have received most timely assistance and enlightenment.

The scientific world in general owes Dr. Weston A. Price a debt of gratitude that is immeasurable for the discoveries that have been made possible by the wonderful institution he has labored so ardently and unselfishly to establish.

The founding of this institution has furnished an opportunity for dentistry to make an unprecedented advancement and its success should receive our greatest consideration and concern. I wish it were possible for the profession to keep in closer touch with the work that is being done by our research workers.

The dentist who is truly alive to his obligations, must be an accurate observer; quick of understanding, an untiring, insatiable student in every respect; always delving into the deepest realms of the unexplored for some priceless jewel of thought which he may place as a gem in the diadem of his beloved profession, to aid in alleviating the sufferings

of humanity, and to enlarge the common store-house of knowledge, that the world may be a little better, a little happier because he has lived in it.

The wide-awake dentist realizes that a great change is taking place in the requirements for practicing dentistry today. We have come to a place in our progress where there must be no hesitating. It is the zero hour and we must go over the top. He who falters is lost. We must lay aside our pet theories, cease chasing the chimerical phantoms that have in so many instances obscured the light, and become earnest inquirers of the truth. We must back up our ideas and methods by cold, hard, indisputable facts.

We have many very great problems confronting us in the activities of our profession. No one is going to solve all of them. Perhaps no individual will be able to solve any one of them unaided, but I have faith in the profession to believe that ultimately, by our united and organized efforts, all of these perplexing questions will be solved to a degree that will cause our work to be uniformly successful.

We should seek yet a closer co-operation between medicine and dentistry and the other specialties, in order that each may have a better understanding of the relationship existing between our work and that of the other branches of medicine. There should be no embarrassing questions by the laity of why we advise one thing in a certain condition, while the physician holds to an opposite point of view, but our knowledge should be positive and we should be able to view these questions from every conceivable angle.

It is practically impossible for anyone to get the best results in any undertaking of life without *inspiration*. We may possess the necessary physical power, the knowledge and understanding, the skill to perform, and be supplied with every equipment necessary for the carrying out to the minutest detail, every phase of an undertaking, but if we lack inspiration, we shall not proceed very far nor very well along any line of action we may undertake.

Inspiration is the spirit, the courage—the soul of every man who achieves success in any undertaking of life, and without it nothing can be accomplished that is worth accomplishing. If we expect to be successful in any chosen vocation, we must be inspired with a liking for everything pertaining to that vocation.

We may become inspired by keeping in close contact with that in which we would become proficient, by study and investigation, getting the views of others that are interested along the same line of thought, and assimilating their ideas, changing and arranging them to conform to the views we already have established, and thus broaden our field of vision and technical knowledge.

There never was a time in the history of the world when so much comfort could be purchased by so little outlay of personal energy, nor



was it ever possible for people in any age before this to obtain at any price the luxuries we enjoy today. Along with the improved conditions of other vocations, dentistry is coming into its own, and we are gaining the respect and confidence we so much covet.

Dentistry is not a "business" in which a small revolving capital may be made to do wonders, nor is it one in which a few great fortunes are made by a lucky turn of the wheel as it grinds out the lives of competitors by the thousands; but it should be the means of support for the dentist and his family, and his support should be sufficient to enable him to live in a degree of comfort and manner agreeable to his tastes, and to allow him sufficient time for the cultivation of his mental resources.

We are entering upon an era of the greatest co-operation ever known. Co-operative methods have proven their superiority, by a fair distribution of benefits according to interests vested, over competitive methods in which one faction succeeds at the expense of all others.

We see the great advantage of co-operation among ourselves as is evidenced by the ever increasing numbers that are being added to our organization. The year just closing saw the largest aggregation of dentists in the history of the profession, when the National Dental Association met at Chicago early in August, and it should be an encouragement to us all to know that notwithstanding the unsettled conditions due to the war, the restrictions in transportation and the absorption of finances for war work, we have not lost any ground in our professional interests.

Statistics show that approximately 90% of the people have pyorrhea, and about 25% of the people are affected with alveolar abscess, and thus we see that a great many are carrying around with them from four to eight square inches of infected tissue surface, polluting the air with a preventable disease and endangering themselves to all of the accompanying complications of rheumatism, neuritis, nephritis and many other resulting diseases more or less dangerous to the life of the individual, and yet we have advanced but very little in our knowledge as to the causes of these troubles, nor have we as yet an entirely satisfactory cure for them. Is it not high time that we were getting busy along some definite line of research work and be able to place the blame where it belongs? Can we properly claim the title of a learned profession and leave such questions untouched when they of right are the questions we should answer?

If the vast army of dentists we have in the United States would spend a reasonable part of their time in study,—careful, systematic, progressive study, many of the perplexing questions that annoy us soon would be answered correctly. What a power for good could be accomplished if each should set apart an hour each day for study and research work along some definite line of thought in which we are most interested.

We are afraid to express an opinion very often because we have no well-defined opinion to express. As a child who is afraid of the dark, we hesitate to advance because we have not given the subject a proper amount of study to cause us to feel sure of the ground we are taking. I therefore most earnestly urge upon you the necessity for your organizing yourselves into study clubs, taking up some definite line of thought to be followed out in study, and thus assist in instituting a regime of enlightenment and progress.

Early in the year I sent out a circular letter to all of the component societies asking for suggestions that would be for the best interests of the Ohio State Dental Society, and to give everyone an opportunity to express his opinion in the direction of affairs.

The sentiment most generally expressed related to the changing of the date of our annual meeting to a time when climatic conditions would likely be more favorable, and also to make the annual meeting more remote from the holiday season. I suggest, therefore, that a committee be appointed to go into the matter thoroughly and make the proper recommendation to be presented to the society for your approval.

I wish to make the recommendation that in selecting delegates to the National Dental Association, the President, President-elect and Secretary of the State society should be named as delegates. They are perhaps most interested in the proceedings of the National Society, and they need most to know first-hand the plans that are being carried out by the national body. I think such action will be conducive to the best interests of our state meetings and will be a great aid to the state officers in their work.

There is a strong assurance on the part of some who are in a position to know that there are a number of persons practicing dentistry illegally in Ohio and without proper license, but it seems that our present laws are inadequate to apprehend such practitioners owing to the inability to obtain sufficient data to form a basis for prosecution, and I recommend to the legislative committee that the law be amended so as to require the annual registration of all practicing dentists with the clerk of the county in which the practitioner is located.

I want to compliment Dr. Bethel, the editor of our official organ, *THE DENTAL SUMMARY*, for the publication of what to my mind is one of the best and most comprehensive dental magazines in existence. We should give it our heartiest encouragement and support and help to make it more strictly an Ohio institution.

I wish to take the present opportunity to thank the different committees who have labored so faithfully to make this meeting a success. The work has been greatly embarrassed this year because of the unusual war activities that have prevailed everywhere and has made our course



of action at times dependent upon conditions over which we have had no control, and has compelled us to adopt new procedures entirely from that we had originally planned.

I wish especially to thank Dr. A. J. Lewis, chairman of the program committee, for his untiring efforts in getting together the talent which is upon the program; Dr. J. M. Chase, chairman of the clinic committee, for his selection and arrangement of the clinics; Dr. Gillett Hayden, for arranging the ladies' section of the program; Dr. Harry Cope, chairman of the local committee of arrangements, for the successful manner in which he has handled the unusual difficulties that has fallen to the lot of his committee because of war conditions; Dr. F. R. Chapman, for his patient and loyal support throughout the year.

I wish to express my appreciation to the members of the society in general for your many expressions of encouragement throughout the year, and for the honor you have conferred upon me in elevating me to the presidency of this most honorable association. It shall live in my memory as the greatest honor of my life and I assure you that the year's work has been most pleasant and inspiring.

I feel that we would be ungrateful if we did not pause for a moment in honor of the memory of those who have passed from among us during the year. Those who have given the very best of their lives, for the love they have borne the profession, having sacrificed their own comfort and pleasure that they might add to the common store of knowledge. I think that it would be fitting that a committee be appointed to draft a suitable memorial to be spread upon the minutes of the fifty-third session of the Ohio State Dental Society, in memory of those members who have gone out from among us during the year.

On February the 12th, Dr. John R. Callahan answered the final summons while at work among his studies in his great endeavor to make plain some of the hidden things of life. To us who were accustomed to follow his line of thought, and were interested in the great questions he was helping to make plain, and which we felt sure he was near solving, his demise seemed untimely, but we bow our heads in obedience to a Divine Wisdom Who doeth all things well, and we are grateful for the inspiration such lives cast upon our pathway.

On October 10th, Dr. A. H. Jones, of Youngstown, while in the discharge of his duty abroad, and in special service for his country, died of pneumonia. No greater epitaph could be written,—“for greater love hath no man than this, that a man lay down his life for his friends.”

You, no doubt, wonder at the change in our meeting place as announced earlier in *THE SUMMARY*, and I wish to explain that we had counted upon the Dental Manufacturers' Club exhibiting at our meeting, as has been the custom heretofore, and we accordingly engaged the

use of the Memorial Hall and the Elks' Club in order to have sufficient space for their accommodation; but at the eleventh hour they notified us that they had decided not to exhibit at our meeting, and not needing the space we had planned for their convenience, we arranged to hold our meeting at the Deshler Hotel instead, as being more in keeping with our amended requirements.

In furnishing the needs of the army dental supplies, the dental manufacturer has found a ready sale for the capacity of his plant, that has made him quite independent of the needs of the dentist in ordinary practice, hence his willingness to ignore the advantages of exhibiting at the State Dental Society meeting.

Most of the manufactured instruments and formulas in use in dentistry are the accomplishment of the ingenuity of the dentists themselves, as the names of Webb, Varney, Abbott, Darby, Perry, Harlan, Marshall, Black and scores of others attest, and have been donated to the manufacturers of dental supplies, who have made fortunes out of them.

I wish to add that much that has been said and written on the business side of dentistry has been very timely and of a nature to stir us to renewed and greater efforts to do better work, but I wish to express a word of caution that we are in grave danger of being charged with taking advantage of the situation and of making unfair and unreasonable charges for very indifferent services.

Very recently my attention was called to a case in which a patient had paid a large fee for an alloy restoration that had rendered no service at all, owing to inflammatory conditions, and had failed, when the conditions present had very strongly contraindicated the practicability of any restoration whatsoever.

I do not take the position as opposed to adequate fees for service rendered, but the ability to ask a fee should be in proportion to the ability to render service, and we should labor most earnestly for the universal adoption of the teachings of the golden rule.

In conclusion, let me ask of you that the same zealous support you have shown thus far in carrying on the work of the society, be continued in upholding the administration which is to follow.

I bespeak for Dr. Hayden and his administration the best year in the history of the Ohio State Dental Society.

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## PRESIDENT'S ADDRESS\*

BY J. W. M'DILL, D.D.S., CLEVELAND, OHIO

SOME FEW MONTHS ago I journeyed down the placid waters of the Potomac to quaint old Mt. Vernon, to pay my respects to the Father of the country for which our forefathers fought and bled and died, and which we love so dearly.

As the whistle announced our nearness, there to the right, high on the Virginian hills, rested the Washington mansion, shaded by the towering trees, a thing of beauty and the pride of the true American heart. We were soon viewing the tomb and humble place for these days of luxury and extravagance, with reverence becoming every American citizen.

As I stood before the resting place of the one we cherish so dearly, and as I recounted the trials at Valley Forge, the gallant charges at Brandywine, surmounting obstacles at Trenton, staring death in the face that wintry night crossing the Delaware, and last at Yorktown, as he received the sword of surrender from Cornwallis, suppressed the cheer of his troops by "Stop, men: let posterity cheer." I wonder how such a man could establish the custom of a President's address each year to be thrust upon a long-suffering public.

A true man would be an ingrate lacking in patriotism, love and devotion if he failed to appreciate trust and confidence.

It is indeed a source of great satisfaction that such confidence has been placed in me, and I consider it a very great honor to be the presiding officer at this the sixty-first meeting of The Northern Ohio Dental Association. The Association is unique in itself and holds a record for which we may well be proud.

The Northern Ohio Dental Association is the second oldest dental society in existence. The first meeting was held in Cleveland, Ohio, November third, 1857, and since then meetings have been held in towns of Northern Ohio without the lapse of a single year.

Of the thirty-five dentists who were present at that first meeting, but one man is still living, Dr. W. P. Horton of Cleveland. This lone remaining charter member has passed his ninetieth birthday, and until a short time ago was more or less actively engaged in his profession.

It is with a great deal of pleasure I bid all of you welcome today. These few days while days of pleasant recollection, are also days for work and instruction, school again as it were: we are still seekers after knowledge.

As we look back we see some progress in dentistry, although in Dr. Ambler's history of The Northern Ohio Dental Association we find the

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\*Read before the Northern Ohio Dental Society, 1918.

charter members of this society in the late fifties and in the early sixties combating with the same problems with which we are dealing today.

Office efficiency, fees, preservation of abscessed teeth, judicious use of arsenic, preparation of cavities, use of tinfoil, gold and porcelain, artificial dentures, crown and bridge work, pyorrhea, a higher standard for dental students, were the problems of fifty years ago and are still the problems of today.

Watt, Atkinson, Ambler, Robinson, Strickland and Slosson blazed the trail of fifty years ago and showed the Anglo-Saxon courage of leadership.

It is none other than the Anglo-Saxon who navigates the unsailed seas, who penetrates the unexplored forests, who digs deep into the earth for its treasures, or mounts the heavens as an eagle.

All leaders require courage. Lincoln had no precedent for saying "all men are created free and equal. If slavery is right then everything is wrong." Or for the signing of the Emancipation Proclamation.

Columbus had no precedent for claiming the world was round. McKinley had no precedent for declaring war on Spain to free a persecuted and downtrodden people. Theodore Roosevelt had no precedent for pledging a nation in building the Panama Canal.

Jas. J. Hill the greatest railroad genius this world ever has produced violated a precedent in building his transcontinental railroad into an unpopulated country. In spite of this, his is the only railroad that never has been in a receiver's hands. It's great to have the courage of a leader.

How many of we younger men could think of practicing dentistry without a fine upholstered chair, an expensive engine, a handy and convenient cabinet, a fountain cuspidor, a gasometer, instruments by the score adapted to the case, and yet many of the men we have with us today labored diligently and faithfully year after year without these very things.

Our lots have surely been cast in pleasant places. While the older men toiled wearily for days and days gathering what they could by hook or crook, today we have the well-managed and finely-equipped Dental College.

What a really great honor it is to be an American dentist!

From the feeble effort in 1839 at Baltimore, we find him in the North, South, East and West. We find him in the islands of the sea; in China and Japan and in far off Manilla.

As a blazing sun sinks below the horizon and brings to a close a busy day for our brother on the blood-stained fields of Flanders, it is to kiss the bleak hills of Maine, to light up the spires of Washington, to start the muffled tread of thousands upon thousands and to find the American



dentist marching shoulder to shoulder with the merchant, the minister the lawyer and the doctor.

So much is heard these days of slackers, blighters, camouflage and of efforts made to evade the draft law, that one might suppose "The Spirit of 1776" was dead and that Lincoln made his Gettysburg speech in vain; that patriotism in America was but a sounding cymbal.

But patriotism in America is not dead. On the contrary it is very much alive. We do hear, however, much of the few who would shirk their duty. So relatively few are they, indeed, that their number makes them conspicuous. The fires of loyalty and love of liberty kindled by Washington and Jackson and kept growing by Lincoln and Grant burn brightly today in the breasts of millions.

Thousands upon thousands are exhibiting the same zeal which induced Paul Revere to make his historic ride, and like Nathan Hale their one regret is that they have but one life to give in defense of their country.

And the women of today are doing their full duty no less than did those who live in history. The Betsy Rosses of today are sewing for the boys in the trenches with the same fervor that gave birth to the flag; the same bravery of Barbara Frietchie, and the same courage of the Virginia girl who refused to renounce the confederacy for President Lincoln in order that the life of her brother may be spared, is dominant in the rank and file of American women today.

Whether we wish it or not, this country is at war. Our ships are on the sea stripped and ready for action; our harbors are mined; our coast defense guns are shotted; our men are mobilizing, and in France today we have almost a million men. But what is a mere million men when today thirty-five million men are out of the regular channels and engaged in legalized warfare?

As Senator Lodge says "Its time for the setting of our teeth," when we realize the Kaiser has taken five hundred thousand square miles of territory and that not one ounce of blood has been shed on German soil.

Up to the present time we have found an antidote for most everything. Commerce has proven an antidote for famine and science makes pestilence lie like a dead snake by the highway, but so far we have found no antidote for war.

Its a stern business and every man in this society must put his shoulder to the wheel. We must conserve and conserve again.

The recent rulings of the government have brought us face to face with conservation in our offices the like of which we never dreamed of. But this is not asking much when we realize the sacrifices others are making for us. Its our duty to prove to them we are with them heart and soul.

After months of work at the Lakeside Unit Base Hospital "somewhere in France," of which this society has the honor of having three members, Miss A. F. Rowland came home on a darkened, silent ship with a company of semi-invalid men, "war wastage" she called them, to find Fifth Avenue a blaze of light, gorgeously dressed women laughing over the newest comedy as they ate after-theatre suppers, hotel tables loaded with food and no sign of awakening to the duty of restraint or sacrifice.

"My hardest hours were not spent in the hospital making ready for wounded from the front who came sometimes at the rate of seventeen hundred in a day, or in seeing a good soldier buried, but in facing the waste; the indifference; the extravagance here at home," said Miss Rowland. "The wasted food I saw on hotel tables alone would feed Rouen. The power used in needless electric signs on Broadway or Fifth Avenue would heat all France that is everywhere dark and cold."

There can be little complaint found with the dental profession for they have given freely and gladly. Today this society can boast of more than fifty men serving under the stars and stripes.

It is needless for me to mention the work done by the Preparedness League, but through its efforts thousands of fillings have been placed in the mouths of the selective service men by members of this society, not only in Toledo and Cleveland but also in the rural districts.

The enthusiasm with which the leaders of this League have been endowed has worked wonders among us. Someone has said that a year ago a protest was visible on the face and in the step of almost every drafted man, but at the end of a year this has all disappeared. We see them now with heads erect, a firm steady step, their skin is clear and with eyes as keen as those of an eagle.

All that is necessary to make the blood tingle in the veins of every British seaman is to mention the name of that battle-scarred hero, Admiral Nelson, who before he fell mortally wounded at Trafalgar sent his last signal from the quarter deck of the Victory, "England expects every man to do his duty."

And so with us the same order should ring in our ears for the Northern Ohio Dental Association expects every man to do his duty, and now what are you and *you* and *you* doing to uphold the honor and the dignity of this grand society?

This war as terrible as it seems, and few there are but who have loved ones "over there," or in preparation over here, is fast bringing us closer together, leveling men as it were and eliminating caste.

It seems no more of a hardship for the officer to lay down his life than for the lad in the trenches to make the supreme sacrifice in "no man's land."



Sir Stanley Maude was more than a general. He was a kindly gentleman, a British gentleman of the type that has now the admiration of all nations that respect true gentility.

The conqueror of Mesopotamia lost his life through an act of compassion. Declining to allow any escort to accompany him, he entered the danger zone of a cholera-stricken village and even drank from the ceremonial cup which was offered him in token of welcome.

This British master of men could not offend even the lowest Bedawi, and from the ceremonial cup of the desert chief he drank the draught of death.

England sincerely mourns Sir Stanley Maude. No leader has appealed more strongly to the popular imagination. He retrieved the disasters of his predecessors by correcting their mistakes and he rehabilitated Britains' military fame in a field when British repute had fallen very low. He was cautious but vigorous. He subjected his men to no needless dangers. Wherever he led his conquerors he brought confidence and joy to the wretched natives.

Now that the manner of his death has been officially announced an ever brighter glow surrounds the memory of the hero.

The contrast between the British conqueror who could not give offense to the chief of a plague stricken mud hamlet and the German conquerors who have crucified the womanhood of Belgium, cut down the fruit trees of Picardy and made Rheims Cathedral the target of their malice, is too striking not to be noted by all the people of the world.

It is a contrast between England and Germany, between enlightenment and medievalism, between love and hate.

Only the spirit of love and sympathy could have caused our own Naval hero, Commodore Phillips, after our successful engagement at Santiago, with the Spanish seamen wounded and bleeding, to order his men to "stop cheering, for the poor fellows are dying." All these finer traits come through proper education.

China was struck dumb when we returned \$2,000,000 of Boxer Rebellion indemnity with the instruction that they use it to educate their youth. Such a thing never had been heard of in the history of nations and since then China has been our staunchest friend.

This country has stood for higher education first, last and all the time.

A certain Cleveland young man, born of rich but worthy parents, is filling a khaki uniform at Camp Sherman. All his life this young man has done just exactly as he pleased. He didn't please to go to school when he was a youngster, so he didn't go to school. He did not please to study

anything but having a good time as he grew older, so he studied nothing and had a good time.

He is a great favorite with all the "fellows," and is a "regular fellow" himself, but when it comes to reading a book or writing a letter he simply isn't there. He never liked to do those things, so he never did them. He wanted to be a soldier, so he enlisted, going to camp with a bunch of fellows and expecting to have the time of his life.

Since he enlisted, however, he has been doing several things because somebody else pleases to have them done and not because he particularly pleases to do them. Also since he has been in camp he has observed that some of the fellows who have no money but who have cultivated their brains are getting the officers' positions and making good. In fact, this young man's eyes have been opened and his ambition aroused. He wants to be an officer too, and has applied himself to study for a commission, and it's hard, hard work for his untrained mind.

Recently his doting mother wrote him asking if there was anything in particular that he wanted her to send him. "Isn't there something you haven't got that I can get for you?" she questioned. "Mother," came the reply, "I don't want a darn thing unless you can send me some brains."

This war is making the time rapidly draw near when the college-bred men will lead in all professions.

Today in public life at Washington, college men claim the majority. In the senate are forty-six college graduates and twenty-one with academic training.

The House of Representatives has one hundred and fifty-nine college graduates, while one hundred and nineteen are graduates of academies.

The President and five members of his cabinet hold college diplomas while two of the nine Supreme Court judges are likewise favored.

Were it not for this bond of love and sympathy and patriotism kindled by the fires of education, would we find today the American Indian buying \$9,000,000 of liberty bonds? Would we find five thousand of these Red Skins ready to take their turn in the front-line trenches?

Were it not for these same fires of education would we at the end of fifty years find the cannibal of the Fiji Islands and the savage of New Zealand standing shoulder to shoulder with his allied brother, either in the Alps, on the sands of the desert, or in the swamps of Flanders?

It is indeed a bond of sympathy, a bond of fellowship and a bond of brotherhood and how often we should pray that prayer,

"Now I lay me down to sleep, I pray the Lord my soul to keep,  
God bless my brother gone to war, across the sea, in France so far,  
Oh, may his fight for liberty save millions more than little me,  
From cruel fates or ruthless blast, and bring him safely home at last."



**Preparedness League of American Dentists****News and Notes****EXPANSION OF THE LEAGUE**

Our League has made a permanent place for itself. It has proven its usefulness to the dental profession and its necessity to the welfare of humanity. Its field of operation reaches wherever organized dentistry exists, and its public service may be felt to the extreme limits of civilization. Such is a brief outline of the field of our future endeavors.

In expanding the activities of the League, we desire, however, to lay down the following unvarying rules and principles that any misconception of our aims may not occur:

1. The principle of the League is Service to Humanity.
2. Politics or promotion of personal interests *shall not be tolerated*.
3. It is essentially an organization for public health service.
4. Its activities shall not conflict with other dental organizations in any way.
5. Its object shall be the co-ordination of all professional and public agencies which may thereby render better service for the common welfare of humanity.
6. No officer or member of the League shall receive pay for services unless of such character as to be justifiable, but not without proper action by a quorum.

These principles must be strictly adhered to or the organization cannot live.

At a meeting of more than one hundred dentists at the Royal College of Dental Surgery, Toronto, Ontario, on Dec. 19, 1918, a resolution was unanimously adopted for the appointment of a committee of Canadian and American dentists to meet in Buffalo, Jan. 11, 1919, to formulate plans for an international organization, using the League plan as the basis of procedure. Our members will be informed of the results as early as possible and final action will not be taken without the approval of those interested.

The wonderful power for good of such an organization cannot be estimated. It must be truly democratic and ever ready to extend a helping hand wherever our rightful province may reach. It is impossible to outline the possibilities in a few words, but I refer you to the editorial by Dr. Kirk in the December *Dental Cosmos*; also that by Dr. Ottolengui in the December *Dental Items of Interest*.

The great opportunity for the dental profession is at hand, and a magnificent work is before us. We will accept the responsibility, with the Golden Rule as our guide, and endeavor to prove faithful to the trust. Big things are before the American public today. We must rise to the occasion and think big, act big and DO big. It is up to us to see that our profession keeps pace with the leaders.

## INSTRUCTION IN POST-BELLAM ORAL SURGERY AND PROSTHESIS

The course of instruction given at the Royal College of Dental Surgery at Toronto in December last, was the first one given in conjunction with the League and without doubt it proved to be the best course given thus far.

The splendid faculty was composed of Lieutenant-Colonel Guy Hume and Major E. W. Cummer, representing Canada, and Arthur E. Smith, D.D.S., M.D., of Chicago and Leroy S. Miner, M.D., D.M.D., Boston, representing the United States. This arrangement gave the meeting international significance and did much toward bringing about better relations of the profession on both sides of the border.

The Military was largely represented in the class numbering one hundred and four. Colonel Clayton, Dental Surgeon-General, of Canada; Colonel W. H. Thompson, Commandant for Ontario, and several other provincial commanders were present, together with Deans Thornton, of McGill University, Dubeau, of Duval and Webster of the Royal College. From the States came State Director Hallenberg, North Dakota; State Director McIntyre, Rhode Island; two League members from Nashville, Tenn., and many others scattered about the border States. Director-General Tracy as well as President Beach also were present to aid in making the gathering a great success. Great credit is due Dr. Wallace Seccombe for his efforts in making necessary arrangements. The course stands in a class by itself and has set a standard for the League to strive to maintain.

The League wishes it distinctly understood that this is not a post-graduate course. It is to be known as a course of instruction in post-war oral surgery and prosthesis, to which it will be strictly confined. Bearing this fact in mind, one week of instruction is ample to cover the field, except in special cases.

The course to be given in New York, early in February will essentially have the same faculty. It was difficult to secure Colonel Hume and Major Cummer, but this has been brought about through the courtesy of Colonel Clayton and Colonel Thompson. We are deeply indebted to these gentlemen for their sympathetic co-operation in this splendid work.

The League hopes to pursue this object until the States and Canada have been well covered and our members are prepared to render efficient service to our injured soldiers. The fee of fifty dollars is divided equally among the instructors, after necessary expenses have been met, the League or the collaborating institution receiving nothing whatever.

*If you are not a member of the League—join now—we need you and you need us.*

J. W. BEACH, *President.*



# SUGGESTIONS

CONDUCTED BY F. R. CHAPMAN, M.S., D.D.S., COLUMBUS, OHIO

(To Our Readers: Give others the benefit of your practical suggestions by sending a description of them to Dr. F. R. Chapman, Schults Building, Columbus, Ohio.)

## Removing Inlay Wax

The wax should be burned out within the hour of investing. If allowed to set over night there is great danger of cracking. After the wax has been burned out it makes no difference when they are cast.

—L. B. Morris, *Dental Review*.

## Contour of the Arch

Before extracting upper anterior teeth, especially cuspids, for bridges it is often beneficial to take an impression and run up a model of the teeth and gums. By so doing you will find the model a valuable aid in arranging the teeth on the bridge.—W. O. Fellman, *Dental Review*.

## A Wonderful Devitalizing Paste

Take a speck of arsenic and mix with equal parts of oil of cloves, carbolic acid, thymol and menthol to make a paste. Apply to the cavity and allow to remain for three to five days; an ideal devitalizer where the pulp is highly congested; no pain will follow after its application.—D. A. Martinez, *Bluefields, Nicaragua*.

## Repairing Hole in a Gold Crown

If in the finishing process a hole is made in a gold crown, paint the outside with a mixture of thin whiting, except round the hole. Plug the hole with gold foil, touch it with borax, and use a little gold solder inside the crown. Fuse with blowpipe and a good repair is the result.

—C. A. K., *Oral Health*.

## Short-Necked Vulcanite Teeth

In dentures that have vulcanite gum, it is faulty workmanship to use full or long-necked teeth and then cover up the necks with gum rubber. No purpose is served, for the porcelain necks simply pierce the gum flange and weaken its attachment to the internal base rubber. A tooth neck should be reduced by grinding if it comes too close to the plaster cast; in many cases where there is a prominent alveolar border, it is better not to choose necked teeth for use with a thin flange of vulcanite gum.—D. McIntosh Shaw, *Dental Record*.

# OHIO STATE SOCIETY

Through the generosity of the publishers of THE DENTAL SUMMARY, this space is made available for the use of the State Society and its Components in making announcements of general interest. The secretary of the State Society will use this medium as occasion requires and it is hoped that this will prove a valuable means of disseminating information to the Components and to the membership individually.

Many members have not yet paid their dues for 1919; the mailing list of THE DENTAL SUMMARY and of the *National Dental Journal* is made up from those who are in good standing, i. e. those whose dues are paid for the current year. If you have not paid yours, please do so at once and secure your journals regularly from the beginning of the year.

Those whose names appear below under the head of "Committees for 1919" will please accept the publication as official notification of their appointment by the President.

F. R. CHAPMAN, *Secretary*.

## Committees for 1919

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## The Component Societies of the Ohio State Dental Society

(This list of Officers is compiled from information furnished by the Secretaries of the various Components; where incorrect it is due to lack of information relative to elections. Secretaries are requested to keep the list correct by informing the secretary of the State Society or the Editor of THE DENTAL SUMMARY of the result of elections.)

BUTLER COUNTY DENTAL SOCIETY, meets 3d Friday each month.—Pres., P. A. Krucker, Hamilton; V. Pres., E. E. Meisterhaus; Sec.-Treas., F. T. Craven, Hamilton.

CENTRAL OHIO DENTAL SOCIETY, meets 1st Wed., Feb., May and Oct.—Pres., C. B. Emery, Marion; V. Pres., O. M. Young and F. Burger; Rec. Sec., D. G. Welch; Cor. Sec., F. R. Mann, Marion; Treas., F. C. McGaughy.

CINCINNATI DENTAL SOCIETY, meets 3d Friday. Pres., S. J. Rauh, Cincinnati; V. Pres., R. W. Taylor; Rec. Sec., Wilson Foster; Cor. Sec., Paul Cassidy, 807 Livingston Bldg., Cincinnati; Treas., J. D. Gordon.

CLEVELAND DENTAL SOCIETY, meets 1st Monday. Pres. W. C. Stillson; V. Pres., Ira Saum; Rec. Sec., S. F. M. Hirsch, 5415 Euclid Ave., Cleveland; Treas., E. D. Phillips; Cor. Sec., Frank Acker, 14516 Detroit Ave.

COLUMBUS DENTAL SOCIETY, meets last Tuesday. Pres. Oscar Miesse; V. Pres., D. P. Snyder; Sec., F. L. Gruber, 131 E. State St., Columbus; Treas., A. O. Ross.

CORYDON PALMER DENTAL SOCIETY, meets 2d Thursday, April and Oct.—Pres., G. H. Ormeroid, Warren; V. Pres., J. F. Steele and T. J. Evans; Rec. Sec., R. R. Bode; Cor. Sec., J. H. Chesrown, Wick Bldg., Youngstown; Treas. J. K. Nash.





**EASTERN OHIO DENTAL SOCIETY**, meets 1st Thursday, May and Oct.—Pres., H. D. Smith, Cadiz; V. Pres., C. S. Starkweather and L. B. Peterson; Rec. Sec., J. K. Hunter; Cor. Sec., J. G. Parr, Martins Ferry; Treas., W. J. Nesbitt.

**HANCOCK-SENECA COUNTIES DENTAL SOCIETY**, meets 2d Wednesday.—Pres., T. C. Schwartzbek, Findlay; V. Pres., A. O. Cole; Rec. Sec., E. V. Burns; Cor. Sec., A. E. Mann, Findlay; Treas., V. H. Michener.

**HOCKING VALLEY DENTAL SOCIETY**, meets 1st Monday.—Pres., J. J. Stuke; V. Pres'ts., C. F. Ackers and W. M. Scott; Sec., W. E. Shadrach, Lancaster; Treas., S. D. Vosper.

**LORAIN COUNTY DENTAL SOCIETY**, meets 1st Tuesday, Feb., Apr., Sep. and Nov.—Pres., W. G. Schaeffer, Amherst; V. Pres., J. A. Minnich; Rec. Sec., P. E. Maddock; Cor. Sec., J. J. E. Betteredge, Elyria; Treas., J. E. Trombley.

**MAD RIVER VALLEY DENTAL SOCIETY**, meets 2d Monday, bi-monthly.—Pres., C. M. Evans, Springfield; V. Pres., Rec. Sec., C. A. Dawson; Cor. Sec., S. D. Hockman, Springfield; Treas., H. G. Butcher.

**MAUMEE VALLEY DENTAL SOCIETY**, meets 2d Tuesday, June and Oct.—Pres., A. B. Thompson, Metamora; V. Pres., N. A. Cunningham; Rec. Sec., O. S. Applegate; Cor. Sec., H. M. Jordan, Hicksville; Treas., J. A. Benner.

**MIAMI VALLEY DENTAL SOCIETY**, meets last Monday. Pres., J. W. Siegfried, Third St. Arcade, Dayton; V. Pres., H. C. Huffman; Rec. Sec., F. W. Cockerill; Cor. Sec., G. W. Riche, 622 N. Main St., Dayton; Treas., J. R. Arthur.

**MUSKINGUM-COSHOCOTON-GUERNEY COUNTIES DENTAL SOCIETY**, meets 2d Thursday, Jan., May and Sept.—Pres., W. H. Dillon, Zanesville; V. Pres., P. F. Walker and A. W. Boyd; Rec. Sec., J. A. Honabarger; Cor. Sec., B. M. Beatty, Zanesville; Treas., H. J. Boyd.

**NORTH CENTRAL OHIO DENTAL SOCIETY**, meets 3d Wednesday, Jan. Apr., July and Oct.—Pres., C. D. Peck, Sandusky; V. Pres., R. E. Woelagel; Rec. Sec., P. A. Gould; Cor. Sec., A. G. Thatcher, Fremont; Treas., E. S. Braithwaite.

**NORTHEASTERN OHIO DENTAL SOCIETY**, meets 2d Monday.—Pres., N. H. Bishop, Andover; V. Pres., H. O. Frederick; Sec., O. T. Battles, Jefferson; Treas., O. T. Battles.

**NORTHWESTERN DENTAL SOCIETY**, meets 4th Wednesday.—Pres., A. N. Bruzilius, Lima; V. Pres., E. A. Bobo and G. L. Brunk; Sec., J. W. Dimond, Lima; Treas., J. K. Bannister.

**OHIO VALLEY DENTAL SOCIETY**, meets 2d Wednesday, Apr. and Oct.—Pres. M. D. Hartinger, Pomeroy; V. Pres., R. B. Church; Sec., C. S. Shumaker, Pomeroy; Treas., J. B. Hodge, Middleport.

**REHWINKEL DENTAL SOCIETY**, meets 3d Thursday. Pres., M. G. Phillips, Chillicothe; V. Pres., A. M. Bush and O. A. Thompson; Sec., F. D. Woollard, Washington C. H.; Treas., W. E. Robinson, Washington C. H.

**RICHLAND-ASHLAND COUNTIES DENTAL SOCIETY**, meets last Monday, Feb., June and Oct.—Pres., J. F. Winans, Shelby; V. Pres., B. W. Livingston; Rec. Sec., F. O. Eckstein; Cor. Sec., J. H. Bristol; Treas., F. H. Williams, Shelby.

**SOUTHEASTERN OHIO DENTAL SOCIETY**, no report.

**SOUTHERN OHIO DENTAL SOCIETY**, meets 3d Monday, May and Oct.—Pres., O. D. Donaldson, Portsmouth; V. Pres., F. C. Goodwin; Sec., E. C. Jackson, Portsmouth; Treas., E. O. Buchanan.

**STARK COUNTY DENTAL SOCIETY**, meets 3d Wednesday.—Pres., J. C. McConkey, Canton; V. Pres., C. O. Carr; Rec. Sec., E. H. Alden; Cor. Sec. and Treas., B. Hugo Bowman, Canton.

**SUMMIT COUNTY DENTAL SOCIETY**, meets 1st Friday. Pres., W. C. Cooper; V. Pres., Jas. Conners; Rec. Sec., E. E. Stewart; Cor. Sec., G. H. Dumm, Kent; Treas., C. S. Hoover.

**TOLEDO DENTAL SOCIETY**, meets 3d Friday. Pres., W. J. Dierks, 1018 Spitzer Bldg., Toledo; V. Pres., R. K. Wood; Sec., L. C. Jackson, 2205 Ashland Ave., Toledo; Treas., C. H. Cox.

**W. D. MILLER DENTAL SOCIETY**, meets 2d Thursday, May and Oct.—Pres., E. V. Prior, Newark; V. Pres., W. S. Deeley; Rec. Sec., J. D. Ford; Cor. Sec., L. E. Davis, Granville; Treas., W. B. Grossman.

**WESTERN OHIO DENTAL SOCIETY**, meets 1st Thursday, Feb., May and Oct.—Pres., R. M. Kerr, Sidney; V. Pres., R. S. Van Hise, H. V. Steinmetz and J. F. Richeson; Sec.-Treas., R. R. Kelsey, Greenville.

**WOOD COUNTY DENTAL SOCIETY**, meets 2d Wednesday.—Pres., F. W. Wemmer, North Baltimore; V. Pres., B. D. Roe; Sec., R. E. Milbourn, North Baltimore; Treas., T. M. Lea.

# SOCIETY ANNOUNCEMENTS

## **The Central Ohio Dental Society**

The annual meeting of this society will be held in Marion, Ohio, February the 5th.

A splendid program is promised.

F. R. MANN, *Cor. Secretary.*

## **The American Society of Orthodontists**

The Nineteenth Annual Meeting of the American Society of Orthodontists will be held in St. Louis, Monday, Tuesday, and Wednesday, March 10th, 11th, and 12th, with headquarters at the Planters Hotel. An excellent program is assured.

F. M. CASTO, *Secretary.*

## **Iowa State**

A special meeting of the Iowa State Board of Dental Examiners for the examination of applicants will be held at Iowa City, Iowa, commencing March 10, 1919, at 9:00 A.M.

For further information address the secretary,

DR. J. A. WEST,

417 Utica Bldg.

Des Moines, Iowa.

## **Illinois State**

The Fifty-fifth Annual Meeting of the Illinois State Dental Society will be held in Peoria, Illinois, May 13, 14, 15 and 16, 1919. The officers of the society are as follows: L. B. Torrence, President, Chester, Illinois; G. D. Sitherwood, Vice-President, Bloomington, Illinois; J. P. Luthringer, Secretary, 507 Jefferson Building, Peoria, Illinois; T. L. Grisamore, Treasurer, Chicago, Illinois; G. H. Henderson, Librarian, Chicago, Illinois.

Most sincerely yours,

J. P. LUTHRINGER, *Secretary.*

## **Minnesota State**

The Minnesota State Dental Association will hold its next annual session at St. Paul, Minnesota, February 6, 7 and 8, 1919.

A program of unusual interest is being prepared and a cordial invitation is extended to all members of the National Dental Association, to attend this meeting. For information address,

MAX E. ERNST, *Secretary.*

1125 Lowry Bldg., Saint Paul, Minn



**Kentucky State Dental Association**

The Fiftieth Anniversary-Jubilee Meeting of the Kentucky State Dental Association will be held at Louisville, Ky., June 9-10-11-12, 1919.

A Post Graduate Course of unusual interest has been planned.

Address all correspondence to

W. M. RANDALL, *Secretary*.

Louisville, Ky.

**Alumni Society of the Dewey School of Orthodontia**

The Alumni Society of the Dewey School of Orthodontia will hold their next annual meeting in St. Louis, March 6, 7 and 8, 1919. The usual high standard of the meetings of this society will be maintained. All interested in Orthodontia are welcome. Address communications to DR. GEORGE F. BURKE, 741-43 David Whitney Bldg., Detroit, Mich.

**The Texas State Dental Society**

The Thirty-ninth Annual Convention of the Texas State Dental Society will be held at Waco, Texas, April 21st, to 24th, 1919.

Several men of national prominence will conduct the post-graduate feature of the meeting, which will supplement the program of papers and clinics by members of the Society.

J. G. FIFE, *Secretary*.

736 Wilson Building, Dallas Texas.

**Michigan State**

The Sixty-third Annual Meeting of the Michigan State Dental Society will be held at the Hotel Statler, Detroit, April 7th-12th, 1919.

To meet the demand for dental meetings that teach, another post-graduate course, greatly improved and added to, will be put on by the Detroit Dental Clinic Club.

All Michigan talent will also make up the general program.

CHALMERS J. LYONS, *President*.

CLARE G. BATES, *Secretary*.

**Missouri State**

Announcement of the Clinic Committee of the Missouri Dental Association, Statler Hotel, April 14, 15th, and 16th, 1919, St. Louis, Mo.

The clinic program for the Fifty-fourth Annual Meeting of the Missouri State Dental Association promises to be an unusually interesting and profitable one.

Wednesday afternoon, April 16th, has been set aside for our table clinics.

Special features have been arranged by which you can see your favorite clinic without confusion.

NOTICE: All clinics must be handed in before March 24th. If you have not done so mail the title of your clinic at once to

CHARLES P. GROSBY, *Chairman*.

Frisco Bldg., St. Louis Mo.

# NEWS and OPINIONS

CONDUCTED BY G. E. HARTER

## LACONIGRAMS

Sometime, it is to be hoped, we shall all stop thinking about the war and then I shall quit writing about it. Just now there seems to be need to consolidate and emphasize public opinion as to the sort of peace that Germany is to have. Here are some of the reported conditions to be considered:

The German people have been told that their armies were not defeated, and that the fighting stopped because the kaiser had abdicated, and then the allies asked the huns to consider terms that should be mutually beneficial, without penalty or "loss of face."

The manufacture of submarines and other war stuff is said to be going on as actively as ever except at the Krupp works.

The faintest suggestion that Germany is to be penalized meets with instant opposition and threatens to renew the war.

Marshall Foch's suggestion that the Rhine become the western border of Germany is the most sensible proposition yet made by any of the allied authorities. Of course the huns howl "bloody murder."

Riots, murders, "revolutions," all sorts of violence are keeping Germany in a state of turmoil in which it is impossible that any form of stable, responsible government should take shape. Indications are that allies may be obliged to restore and maintain order by force.

In the meantime constant begging whines for food, for advantages in trade after settlement, for about everything conceivable, are fretting the heavens.

Germany complains that she is starving. If true, it would be only a small matter in the full measure of justice that should be meted out to her.

I do not "cry for vengeance," but we must all unite in the demand for justice, which means reparation to the last farthing. I am not at all interested in the question "How can Germany Pay" if the allies refuse to supply her with food and raw materials. That is Germany's problem. *Impose the penalty and let Germany sweat it out.*

Did Germany ask Belgium how she could pay the numerous and heavy fines, so brutally imposed and enforced, with banks looted, factories gutted, farm implements in thousands burned and ruined, thousands of her best workers deported as slaves to work for Germany, other thousands of her wives and maidens "deported" to minister to the vile lusts of brutal soldiery? Or did Germany ask France in 1871? NO! I have no interest at all in *how* Germany shall pay, but I ask the united demand of an out-

raged humanity that she *shall* pay, and from her own resources, without aid from us or any other civilized people. Worse than South Sea savages, she deserves and should receive no consideration other than that she meted to the peoples that she deliberately set out to enslave.

It may be interesting to learn that The Abbott Laboratories of Chicago are sending to physicians and dentists, on request, convenient trial tubes of ten Chlorazene tablets. In view of the growing importance of the Dakin discoveries, we suggest to our readers that they avail themselves of this offer.

Mebbe L. E. Custer, Dayton, Ohio, might send you a reprint of his article on "A Method for Electro-Sterilization; and Zinc Chlorid Root Filling" on request, if you are "right nice" about it.

Dr. Edwin R. Morris announces the removal of his offices to more attractive and commodious quarters in the new Odd Fellows building, 135 Ellison Street, Paterson, N. J., where he will continue to serve his patients with added and improved facilities, and where he solicits a continuance of patronage.

Never will the people of this country be sufficiently grateful to the press for not printing more than a tiny fraction of the so-called poetry that is offered to it.

The dental corps of the army including the P. L., was large enough to care for five million men. Needless to say, the men themselves would rather show their teeth to the enemy than to the dental corps.

"Statistics show that only one man in one million dies of overwork." In other words, we suppose, only one man in one million is overworked and he dies of it.

When your baby scores 100 per cent. at the contest, just file the record away until he is twenty-four years old, and see how he is going then before you publish it.

More than half of the public school pupils of Hudson, N. Y., between eight and ten years old, were found, upon examination, to be badly in need of dental service—which, happily, they now are receiving.

Someone has described the man who evaded the draft as being like a lemon pie. Yellow clear through and without enough crust to go over the top.

The old-fashioned mother who didn't raise her boy to be a soldier is now reserving a choice space on the "what-not" for a hun helmet.



## THE DENTAL SUMMARY

Some enemies plotted to wreck troop trains, others merely conspired to get rich off government contracts.

Naturally enough, the food specialist who tried porpoise steak immediately began to blow about it.

Students of many colleges who have done their bit are to be allowed to make up time lost by taking summer courses. Good. A little extra work and no loss of time.

"Save the kiddies teeth" by all means; but unless you really love children better let somebody else do the work.

The New York State Health Department has issued a bulletin on the care of the teeth. Really, some of our friends the M.D.s seem to be waking up.

I had the honor to speak before the Youngstown Society, January 13. The boys down in "Sunless City" surely are a lively bunch. I am indebted for special courtesies to Drs. Hayden, Clark, Potter, Moore, Nash and many others. Thank you all. I shall be glad to come again.

During this war the large majority of the soldiers and sailors have been instructed in hygiene and sanitation and the value of health conservation, as the same number could not have been taught in any other manner in many years. This is the time to inaugurate a general health campaign.

Hand in hand with business reconstruction should go the reconstruction of the health laws to make healthier and better citizens. There are not today dentists enough to properly look after the teeth of a sixth of the population of this country. In educating the people to appreciate this service it will also be necessary to increase professional education facilities, and make the work attractive enough to induce young people to take up professional work.

—HARVEY C. BURKHARDT, D.D.S.

Ohio is waking up. At least \$5,000 has been added to the appropriation for instruments at every state institution, and an equally generous appropriation for the treatment of eyes and the employment of both dentists and oculists is asked for in the budget of the administration board. Many a youth has been condemned to a criminal life simply because of physical defects that may be remedied by simple treatment.

Get ready for the new 1919 W.S.S. The habit of thrift inculcated by war needs has saved our people millions of dollars, and peace should greatly increase the amount.

A dentist appeared at the Deshler hotel during the late Ohio State meeting, carrying a large valise, so large that it attracted the attention of friends who commenced guying him.

"Must be moving in to stay," said one. "Well no, boys, I'll tell you," was the reply, "I brought this along having heard there were lots of little things to be picked up at the clinics."

—S.

### An Interesting Letter from France

Bureau Personnel, Amer. Red Cross.  
Paris, France, Nov. 28, 1918.

Dear Harter:

You asked me to write you if I had any interesting experiences to relate. I am afraid I arrived in France too late for anything of interest, having come to Paris but three days before the armistice was signed.

The signing of the armistice naturally made a great difference in the character of the work of the Red Cross. Very few of the men who came over with me found the work they came over to do, but most of them are, like myself, staying on to do what is to be done. For the present I am assigned to the Bureau of Personnel. There is, however, one experience of mine that may be interesting to you, and I shall try to give you a description of the scenes in Paris that followed the signing of the armistice.

A written account must fail, because the reader is unable to know, to realize the little side lights that enter in; and I fear that my poor pen is decidedly wanting when it comes to putting down the multitude of impressions I received.

To really appreciate it, you must first see Paris as I saw it when I first arrived. London was bad enough. The streets at night were dark passages, rendered even more so by the street lamps, the upper parts of which had been painted black to avoid air raids. But Paris was quiet. One felt an undercurrent of apprehension in the air. Everywhere were to be seen signs reading "*Abri 20 paces.*" "*Abri 50 paces.*" etc., denoting where one might fly for safety in case of a raid.

Saturday afternoon rumors began to be heard concerning the signing of an armistice. Very often during the afternoon I noticed people carrying furled flags along but still there didn't appear any sign of joy. About every other woman one met was dressed in deep mourning, and the whole effect was one of gloom.

It was on Monday morning, November 11th—a day I shall never forget if I live to be a hundred! Waiting for an appointment at headquarters, I had gone for a walk, and was returning about 11:15, when I noticed a Frenchman on the opposite side of the street start to run toward me. I paid no attention to him until suddenly I found myself in his arms. He patted my back, and, with tears streaming down his cheeks he exclaimed over and over "*Ah, mon Americaine, c'est fini, c'est fini!*" Well! he being the only excitable individual I could see, I came to the conclusion that he had lost his mind, so decided the best thing I could do was to fall into his mood; so I pounded him and shook his hand, then got away before he kissed me! I reached headquarters at about 11:30 and stood for a moment in front of the Statue of Joan d'Arc. By chance I had chosen the one spot in which to stand as the events of the next few moments proved. I can't describe fittingly what happened next. As far as

## THE DENTAL SUMMARY

the eye could see, along the Rue de Rivoli, doors burst open and people poured out like bees out of a hive. Windows were flung open, and where, a moment before, no decoration appeared, hundreds of flags were flying in the breeze. The buildings seemed alive with people—on the balconies—the roofs—people everywhere. The big street was a solid mass of hatless people moving toward the Place de Rivoli, where stood the statue of Joan d'Arc.

Some one (an American soldier) climbed to the top of the statue with two flags—French and American, and affixed them; then it started. All my life I had heard that, properly sung, La Marseillaise was wonderful. But to hear it properly sung one must hear the French sing it. They treat their national air in a more sacred manner than we do ours. One never hears it whistled on the streets, nor rendered in cabarets. As if one voice that great crowd began the national song. It was a moving moment, I can assure you. To stand there and realize what the past four years had meant

to France; to see men and women with smiles on their faces and tears streaming down their cheeks, singing La Marseillaise—well it is not a scene to be forgotten!

Then the cry was raised "*On to the Place de la Concorde*"; and the crowd began to move in that direction. The Place de la Concorde is an enormous space between the Tuileries and the Champs-Elysees. Just now it is surrounded by hundreds of captured German guns, airplanes, etc.

I moved on with the crowd—no effort on my part, I assure you; all one had to do was keep upright—the crowd furnished transportation.

The one thing I noticed was the inclination on the part of the French people to give the Americans full credit for it all. Everywhere you saw the French and American flags together. Now and then a British flag would be seen, but for the most part those of the two I mentioned. The sight of an American uniform was enough to start a joy riot. Many amusing incidents happened in the next day or so, and some of us

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As an adjunct to the dental toilet of your patients; as a prophylactic tooth and mouth wash, for daily use, there is nothing superior to

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Booklet "The Teeth and Their Care" emphasizes the importance of frequent consultation with the dentist, and contains useful information for patients; 200 copies, imprinted with professional card, furnished gratuitously.

Dental Examination Blank combining chart and Notice to Parents, suitable for dentists doing clinical work among school children, also supplied without cost. Dentist's name and address printed thereon.

## Lambert Pharmacal Company

Twenty-first and Locust Streets

St. Louis, Mo., U. S. A.



## THE DENTAL SUMMARY

rather longed to be in civilian clothes for awhile.

I trust you know me well enough to know that I don't mind being surrounded by a bunch of pretty girls, each one of whom is saying "Ah, Meester Officer Americaine, geeve me a kees, *sil vous plait*!" No, I don't mind that at all—in fact that "if you please" was a highly unnecessary remark on the part of some of them. But sometimes when a mother would see you coming, and lift up a remarkably dirty specimen of the genius kid and request you to "Kees" him—well, of course you love your country and your uniform, but—Oh well, war is hell!

For two days and two nights this celebration kept up without ceasing. At any hour one might waken and hear the shouting.

Paris is now beginning to "come back." They are beginning to take down the sand-bag protections from the various works of art; to remove the "Abri" signs and to light the streets. But I suppose if I stay over here a year I'll not witness a more interesting thing than the scene I have just tried to describe to you.

Am very comfortably located in a small hotel, and am enjoying my work very much. French food was a blessed relief from the article we got in England. During the time I spent in London I never once got up from a meal feeling satisfied—full, yes, but not satisfied. They do not seem to have been able to adapt themselves to the use of substitutes to the extent that they can make things palatable. But in France there's more variety—green stuffs, meat, eggs (in London eggs were fourteen cents each). Have just come up from dinner—a regular Thanksgiving dinner, and we had celery, soup, fish and potatoes, turkey and parsnips, watercress salad and chocolate cream. We seem to have everything to eat except butter and sugar.

With best wishes, I am

Sincerely yours,

LIEUT. H. O. BARNES.

### Oklahoma Plans Dental College

Oklahoma City, Jan. 1.—Plans to organize and conduct a dental school under management of the medical and dental boards, in connection with the Oklahoma Medical College of Oklahoma City, were revealed in a letter to the Chamber of Commerce yesterday. The plan includes inauguration of a post-graduate course lasting ninety days which all practicing physicians and dentists be required to attend at least ten days of each year.

This movement would entail an appropriation of \$15,000 for the dental course and \$25,000 for the additional medical course. It is said that a bill to this effect will be submitted at the next meeting of the legislature.

Get posted and keep posted on the qualities and probable action of the many dentifrices now offered. Every dentist should be as able to advise his patients along the lines of his specialty as any M. D. on general lines. "Doctor" means "Teacher," not "Patcher."

### Arkansas—White County

Little Rock.—The White County Dental Society has been organized with the following officers: Dr. Moore, president; Dr. Evans, vice-president; Dr. Ford, secretary; and Dr. Reed, treasurer. The society is planning a general hygiene campaign at an early date.

### South Dakota—State Board

Sioux Falls, Jan. 6.—The Board of Dental Examiners which meets here today will be in session three days. Examining officers are Ferdinand Brown, of Sioux Falls, Robert Jassman, of Scotland; M. R. Hopkins, of Aberdeen; J. W. Smoots, of Spearfish; and Lyle Spencer, of Watertown. Dr. Spencer has just recently been mustered out of the service at Oglethorpe, Ga., where he was in the dental corps.

### Arkansas—Little Rock

At the meeting of the Little Rock Dental Society, December 11, Y. E. Whitmore was elected president. The principal topic discussed was hygienic condition of the mouth in relation to general health. Work of the past year was reviewed and the benefits derived from the free dental clinic commented on. The dentists of Little Rock and North Little Rock will continue to donate their services for the relief of the worthy indigent of the public schools for the remainder of the school term. An oral hygienic movement is being launched. This subject will be taught in all public schools over the entire state, beginning January 1. H. P. Hopkins, president of the Arkansas Dental Association, has appointed J. T. Peay, state chairman and A. T. McMillin, chairman of the central district for this movement. Officers were elected as follows: Y. E. Whitmore, president; G. C. Brame, first vice-president; J. D. Lord, second vice-president; and J. T. Peay, secretary and treasurer. A vote of thanks was tendered to H. P. Hopkins, the outgoing president.

A late comer to the Ohio State Society had to content himself with a room at an ancient hostelry, where, as he reported, nothing in the room had the appearance of having been varnished for years excepting the cockroaches.—S.

### A Canny Scot

Sandy and John were sitting in a car when a pretty girl got in and smiled at the former. He raised his hat.

"Do you know her?" asked the Englishman.

"Oh, yes, very well," the Scot replied.

"Well, shall we go and sit over beside her, and then you can introduce me?" asked his companion.

"Wait a bit," returned the canny Scot. "She hasna paid her fare yet."

—Pittsburgh Chronicle-Telegraph.

## THE DENTAL SUMMARY

### Ethical Advertising Again

Ethical dentists of California recently conducted a big display advertising campaign to defeat a proposed law which would have lowered the ethics of dentistry in the state by permitting itinerant dentists from other states to practice in California without examination.

This is quite a step forward, since it was only last July that the California state dental associations lifted the ban on advertising.

The resolutions passed at that time stated that while the associations (there are two of them—one for the northern and one for the southern part of the state) are “unquestionably opposed to professional advertising, which is untruthful, misleading, or bombastic in character,” they are in favor of “an educational campaign through the advertising columns of the newspapers in a legitimate, intelligent and collective manner for the betterment of the health of the people of the state of California.”

The advertising already undertaken was brought about as a result of an attempt to amend the state law at the November election, so as to have made it quite ethical for a dentist to advertise in any way he pleased, without fear of having his license revoked by the state board of dental examiners.

The dental associations were not slow in taking cognizance of the value of display advertising in this emergency. Each member was taxed a nominal amount to defray the expense of the campaign. The copy used did not delve into technical details, but urged the voters to cast an emphatic “No” to the proposed amendment.

When the dentistry amendment was submitted to the voters at the polls, it went down to overwhelming defeat. This may be attributed largely to the effect of the advertising.

The associations have planned to raise an additional fund for an educational advertising campaign on oral hygiene. In this lies the real significance of the story.

Do not accept checks signed by persons unknown to you! From Syracuse, N. Y. comes this story: One dentist is out considerable money and one man from the country is minus a Liberty bond as a result of the sojourn here of Dr. John Grant Lyman, now under arrest for

bad check working in Baltimore.

Dr. Lyman, under the name of Francis & Company, offered to buy Liberty bonds. A man came with one and was given a Francis & Company check for \$97.80, market quotation on the bond.

The man went to a dentist, had some work done and gave him the check, receiving the change. The check came back to the dentist from New York, marked: “No funds. Maker unknown.”

What's the use to increase fees if you hand out your purse to the first swindler? The farmer was innocent, and possibly his endorsement on the check will save the dentist; but is *that* any credit to the discrimination of the D. D.'s?

### Known Value Paid for Scrap Metal

We do not guess the values of your scrap gold, platinum, amalgam, sweepings, etc. Our experts analyze it, test it, assay it, and ascertain by scientific methods, its true and exact value. And we pay you for it on that basis.

Our laboratory tests enable us to pay the real value—the highest possible prices for all such material. Our value determining methods are scientifically exacting and reliable.

Mail us today your filings, cuttings, bridges, false teeth (with or without gold fillings), crowns, platinum sheet or wire, scrap gold, bench sweepings, etc.

We will send you the full value of it in spot cash the same day as we receive it, and will hold your material ten days subject to your acceptance of our remittance.

We also buy old jewelry, watches, silver plate, magnetic points,—anything containing gold, silver or platinum or jewels.

Dun and Bradstreet references

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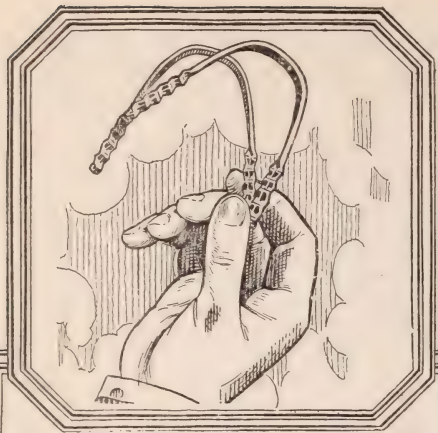
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The Gold Cased Bars are 18k. Gold, 1/5 stock, and if properly fitted and vulcanized will last many years.

The Solid Gold Bars are superior, cost a little more but require less trouble in making and fitting as some of the bar can be filed should it impinge on the tissue and cause irritation, whereas by filing a gold-cased bar you would remove the gold and cause the bar to turn black from oxidation.

Williams Lingual Bars are made with plain, corrugated or split ends. They are properly bent, contoured and semi-adjusted so that with very little manipulation they will fit any case.

**There's a Williams Dental Gold For  
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**Williams Mat Gold**, the best filling gold for the busy dentist.

**Gold Plates**, of highest possible standard.

**Gold Solders**, of standard quality; rich in gold, easy flowing and good color.

**Gold Shells**, all sizes, light and dark.

**Gold Discs**, standard sizes, light and dark.

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**FOR SALE**—\$5000.00 practice in Southwestern Michigan town of 1000. Steam-heated, modern office, good fishing, stone roads, in heart of fruit section of Michigan. Reason for selling, am moving to Minnesota. Address, 210P, care of The Dental Summary.

**FOR SALE**—Complete two-chair dental office, newly furnished, complete with X-Ray, located in Southern Michigan. For details, address Room 1105-6 N. Michigan Avenue, Chicago, Ill. 220C

**FOR SALE**—Central Indiana practice, established fifteen years. 30,000 population. A good office, electrically equipped. Ethical. Business last year, \$5000.00. Address, 230P, care of The Dental Summary.

**FOR SALE**—Fully equipped, best located and arranged dental office in the city of Corry, Pa. Population eight thousand. Practice established thirty years. Long lease and low rental. Fees good, cash basis. Dentist recently deceased. Address, S. B. Smead, 17 E. Congress Street, Corry, Pa. 240P

**FOR SALE**—A good location for a dentist in a town of 1200. Rooms have been occupied by dentist for twenty years. Water, gas and electricity. In the center of the town. Good schools and churches, surrounded by the finest country in Ohio. Steam and interurban railroads run through the town; good roads, good society and prosperous community. Write or call on D. H. Squire, Ashville, Ohio. 260P

**FOR SALE**—Ethical practice, latest equipment, 98% cash business, 10 to 45 patients daily; will stand closest investigation to Bohemian, Polish or Slovak dentist; cause of selling, death. Southwest side Chicago. Address, 270P, care of The Dental Summary.

**Jackson's  
Orthodontic Appliances**



Send plaster models of your cases. Appliances designed to correct any irregularity. Mailed with full instructions when requested.

**Price \$7.00 each**

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# REGULAR CONTRIBUTIONS

## THE DENTAL SUMMARY

THE MAGAZINE THAT HELPS

Vol. XXXIX

March, 1919

No. 3

### STANDARDIZATION IN CROWN AND BRIDGE WORK\*

BY FORREST H. ORTON, ST. PAUL, MINN.

PROFESSOR OF CROWN AND BRIDGE WORK, UNIVERSITY OF MINNESOTA

I DEEPLY APPRECIATE the privilege of expressing my convictions before this representative group of Indiana dentists. I have been requested to employ before you the "Orton Method of Crown and Bridge Work." I wish to disavow any method. Crown and bridge work has been in evolution and it has been my effort to contribute something to this evolution. I do not think very much of any man's method. A method after all is simply the road we might take to reach a certain place. What is more important for us to decide on is where we are going, what we really ought to aim at. So I ask the privilege of first presenting some facts which I believe are facts, the principles which point the way, or point to the place that we ought to aim at. If we know where we are going we are very much more apt to make an intelligent selection of the road. A few years ago we heard a good deal of theory.

"Standardization" is the watchword of the day. The vogue of this word in the current literature of our profession is unmistakable. Now the dictionaries tell us that a standard is a type or model serving as a basis for comparison or judgment, for adjustment and regulation—in other words, a criterion of excellence. But such criterions may have a variety of origins and a wide range of utility; they may be purely empirical, historical or accidental in their origin; their perpetuation may be solely a matter of precedent, tradition or convention; and the value possessed by them may be local, temporal, casual, extrinsic, or even inappreciable. For example: Dr. "So-and-So's" crown or bridge work may be regarded, for one reason or another, as standard. Hence if Smith's or Jones' work compares favorably with his, it is considered good. But Dr. So-and-So's work may be governed by caprice, by adventitious and irrelevant ideals; it may be lacking in every important respect having a bearing upon the health and welfare of the patient. As long as we lack fundamental scientific principles on which to form

\*An illustrated lecture before the Indiana State Dental Society, 1918.



our judgment, our standards are certain to be capricious, likely to be the creations of some powerful personality, some fluent speaker or writer, and obeying the sway of some accidental prestige. We are all familiar with the phenomena of fashion. Once introduced, a fashion becomes adapted to our mental eye, and nothing looks right or beautiful or stylish which does not conform; but when the prestige of a designer has succeeded in changing the fashion, the old style looks dowdy and rustic and ugly; it is no longer "in the swim." These are impressions which are so immediate and unconscious in their working that it is extremely difficult, if not altogether impossible, for any one to resist them, try as he may. Such is the power which current custom exercises over the individual. Now it needs but a slight clinical experience of the crown and bridge work in vogue to make one realize that the majority of dentists are swayed more by prevailing fashions, or by convention, than they are by rational and strictly relevant considerations. I say this, not in the spirit of carping criticism, but in order to clear the ground, so to speak, for the consideration and search for more scientific, or at any rate, more reasonable standards of criticism in the field of crown and bridge work.

We are at present in the midst of what I believe to be a transitional stage. We are passing through a period of experimental and tentative adjustment such as has shown itself to be inevitable in the evolution of all the useful and necessary arts. In the recent annual address of the president of our National Dental Association, the imperative need of a scientific standard of criticism was strongly urged. With this idea I find myself in hearty agreement. We want and need a standard which shall be consistent with the prophylactic requirements that have everywhere become so popular—in theory. We want to be able to classify into groups various typical conditions disclosing similar indications, and we desire to possess the principles which constitute the key to their relationships. We want to be able to confront with clear and certain knowledge those empty and confusing claims to universality which seem to obsess the mind of nearly every dentist who has some slight modification of technic or method to suggest. Nothing is more irritating than the unreliability of the claims made by the expert who has some axe to grind; and yet, for want of really scientific standards, clearly formulated and generally recognized, standards which shall form a solid and teachable body of doctrine—for want of such standards, I say, we are all more or less at his mercy. He tears loose a single fact from its moorings in the compact body of truth, and proceeds to preach it to the world as the only and adequate and complete truth. We certainly ought not to neglect such facts, but we need to see them in their true proportions and in their proper relations. But such a clear and rational vision presupposes the recognition and understanding of natural laws.

Every art passes from the empirical to the scientific stage, and finds it necessary, in its highest development, to formulate standards. Those

branches of our own art of dentistry which may now be said to rest upon scientific foundations illustrate this evolution clearly. Excellent examples of this fact may be drawn from both operative and orthodontic dentistry. But man always begins with action rather than with theory, with tentative adjustments rather than with principles and general ideas. There are undoubtedly men present here today in whose memory the long and painful period of experimentation in the fields just mentioned stands out with vivid distinctness. They know well the many blundering and unsuccessful efforts made to satisfy the needs and requirements with which our practice confronted us. The new methods suggested and tried often ended only in loss and disappointment. Such experimentation is no doubt necessary and unavoidable. We profited both by our errors and by our successes. But gradually there emerged from these myriad experiments an insight into the more expedient and the most successful; we found the mathematical constant, the key, the guiding thread. In the empirical stage, reasoning from principles was conspicuous by its absence. In Harris' "Principles and Practice of Dentistry," for example, or any of the earlier works on orthodontia, the absence of principles was atoned for by a description of a confusing array of appliances, as if mechanical ingenuity could be a satisfactory substitute for a clear idea of what we ought to aim at! Not until we recognized the significance of the areas of comparative susceptibility and immunity, the truth that the shapes of the teeth themselves were predisposing factors in the production of caries and gingivitis; that the relative position of the tooth with respect to its neighbor was an equally important factor, etc., etc.—not until then did order emerge out of chaos. Out of this mass of observation and experiment, the jumble of trial and error, we have come to realize the possibility of favorable as well as unfavorable variations in the shapes of the teeth themselves. We understand now that every line in the tooth has a meaning, that no feature is the result of mere chance, but that all have a biological basis scarcely admitting of question. The one outstanding fact that teeth of the present type have been preserved from the time of the Neanderthal-man to the present day (perhaps 150,000 years), with comparatively insignificant changes, is an evidence of their wonderfully perfect adaptation to their function. That we should still so frequently neglect the guidance of nature's most favorable variations seems inconceivable, and can only mean that we will continue to suffer the penalties always imposed upon those who recklessly ignore a law of nature. And yet, is it not a rare experience to see an artificial crown that really resembles the natural tooth? The conventionalized forms that we have so generally come to regard as representative of the natural teeth cannot endure the slightest scrutiny. They reveal their inadequacy at once. When subjected to the tests which have been adopted in other branches of restorative dentistry, they fail in every essential respect. Modern



dentistry may be said to be based upon the fundamental principle that each operation ought to be so devised and carried out as to prevent a recurrence of decay, or of injury to the soft tissues. It follows that every operation is incomplete or unsuccessful which does not leave the mouth in the most favorable condition possible. This is a fundamental postulate which holds sway in every branch of dentistry. From whatever direction we approach, entrance to the sacred precincts of scientific dentistry is through this gateway. But what is the proportion of dentists in whose minds the word prophylaxis connotes not only an intimate knowledge of natural facts, but also familiarity with the principles of structural design through which a harmony of related parts may be secured? Is the average dentist's knowledge of dental anatomy, to put the same question more concretely, adequate to orient him in the application or understanding of such a scientific standard? It would be obviously unfair to assume that such a knowledge exists, for to do so would compel us to admit a wilful and voluntary neglect of the most basic and important essentials of good dentistry.

In operative dentistry such facts as those referred to above have for some time been clearly recognized. It has been recognized, for example, that an intimate acquaintance with the forms of the various surfaces, and with the various surface markings, is indispensable to a full comprehension of the theory of extension for prevention, as well as of the correction of malocclusion, regarded from the standpoint of a prophylactic measure. Now it should scarcely be necessary to point out, what a very little reflection suffices to show, and what clinical experience super abundantly demonstrates, that the same principles have an equally important bearing upon crown work, nay, even one far more significant and essential. In the restoration of a tooth by filling or inlay there usually is some portion of the tooth left to serve for a guide. In our crowning operations we have no such guide, but are wholly dependent upon our knowledge of dental anatomy. It therefore goes without saying that an intimate knowledge both of structure and of function is a necessary prerequisite for the task of restoring normal functions that have been impaired by disease.

As a method of illustrating the standard of criticism here proposed, I have thought it advisable to present a series of comparisons, or illustrations, in which the function of the various lines of the teeth shall be clearly shown. It is only by such comparisons that the graphic force and argumentative value of the anatomical facts can be brought out. And I hope it will become clear, as I proceed, that these anatomical facts are not the outcome of an *a-posteriori* search in justification and support of generalizations otherwise arrived at, but are the source and foundation-head from which these generalizations themselves have been deduced. I shall ask you to bear in mind, however, that it will not always be easy to do full justice to the anatomical details, and at the

same time observe the limits of time and length necessarily imposed on a paper like this.

In the theory of natural selection, adaptation occupies an important place. Nowhere in nature, perhaps, can there be found a more marvelous example of adaptation than in the relation between the occlusal surfaces of the teeth and the temporomaxillary articulation. If we except the primitive function of prehension, the most important work of the teeth is that of mastication, and this is undoubtedly the principal reason for their development. Prosthetic dentistry has taken advantage of the hints here offered by nature, and has learned its most obvious lessons. The relation between the condyloid path and the occlusal planes has been justly exploited, a fact which makes it all the more difficult to understand why the same laws have been so generally disregarded in crown and bridge work, where occlusion of the teeth appears to be practically the only factor taken into account.† But teeth that occlude do not necessarily articulate, and it is during the process of articulation that mastication takes place. If the jaws moved either laterally, in a straight line, or up and down like a hinge, then the usual construction by which buccal and lingual cusps are made to lie in a line plane might serve the purpose. But we are familiar with the fact that this is not the case. The direction of the condyloid path is downward and forward. Hence in the lateral or masticating movements there is a dropping of the jaw on the opposite side. That is, during the movements of the mandibles the jaws are farther apart on one side than on the other, and yet the teeth may still be in contact on both sides, provided the occlusal planes of the teeth are in harmony with the condyloid path. It is true enough that the buccal and lingual cusps are usually on a level plane when viewed from a perfectly vertical position; but as arranged in the mouth, the lower molars are inclined slightly toward the lingual. This results in buccal cusps which are a trifle longer than the lingual cusps. The corresponding teeth in the upper jaw have a slight buccal inclination, and the lingual cusps are a trifle longer than the buccal.

Now, if the buccal-lingual cusps are on a level with one another, when the jaw moves to the right, there will be no contact on the left side of the jaw, and vice versa. There also will be an unequal distribution of the stress. It is not uncommon to see these occlusal planes actually reversed. In my opinion this is one of the most frequent causes of fractured facings, especially in the bicuspid region.

If I am not mistaken we are largely indebted to Dr. Hall for demonstrating the part played by the cuspids, and in a lesser degree, by the

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†The writer is aware that in using the term *occlusion* as referring to the position of the teeth at rest, and the term *articulation* as referring to the various contacts brought about during the movements of the mandible, he is using terms that have been discarded by orthodontists, but he uses them in order to make the meaning clearer.



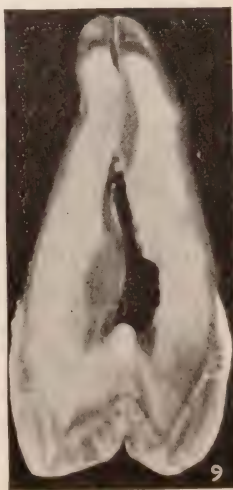
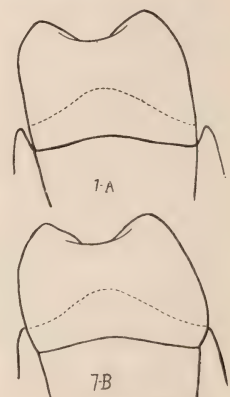
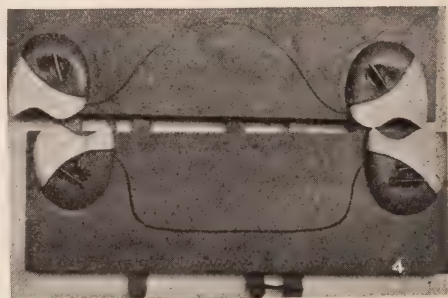
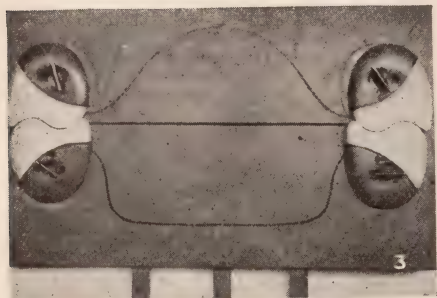
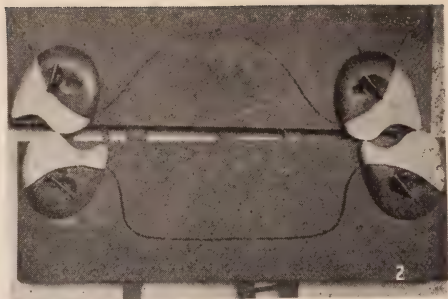
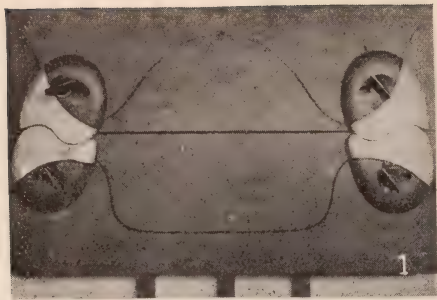


Fig. 1.—Normal relation of the teeth at rest. Note slight inclination of the lower molars toward the lingual and corresponding inclination of the opposing teeth toward the buccal, producing what is known as the bucco-lingual occlusal plane.

Fig. 2.—When the jaw moves to the left it drops on the right, and so forth. See text.

Fig. 3.—When the buccal and lingual cusps are made to lie on a line plane they may be in occlusion when the jaw is at rest, but this is no evidence that they will articulate during the lateral movements of the jaw. Fig. 4.

Fig. 4.—This represents what takes place when the occlusal planes of the teeth are not in harmony with the condyloid path.

Fig. 8.—Bucco-lingual section of upper first molar. The axial walls of the dentin are almost parallel from the gingival line to the gingivo-marginal. Note from this point the axial walls tend to approach each other.

Fig. 7-A.—A flat band does not resemble the gingival contour either in shape or function. A band of this shape may fit the root, but it does not fill the space occupied by the removed enamel, and the gum cannot hug the crown as closely as it did the natural tooth. An unfavorable condition is thus produced.

Fig. 7-B.—The distinguishing characteristic of the banded crown where the band is to extend root-wise as far as the gingival line, lies not only in the entire removal of the enamel, but in replacing this removed enamel as nearly as possible so as to duplicate its natural contour.

Fig. 9.—Upper second bicuspid. Note the enamel and dentin relation is the same as in Fig. 8.

Fig. 10.—Upper second bicuspid. Note the same enamel and dentin relation.

lingual surfaces of the incisors, in determining the condyloid path. The importance of restoring the correct anatomy of the lingual surfaces of the incisors cannot be overestimated, since neglect here may result in profoundly impairing masticating efficiency. The convex surface, or at best, the inclined plane conventionally employed, resembles the natural lingual surfaces of the incisors about as closely as the conventional "fleur-de-lis" design resembles the natural lily. (*Fig. 1.*) The marginal ridges on the lingual surfaces have the function of protecting the interproximate surfaces, and are in contact with the incisal of the lower jaw when in occlusion. But during the lateral movements of the jaw the lower incisors slide into the fossæ formed by the marginal ridges. What happens when we make these surfaces convex in every direction only can be guessed from the interstitial gingivitis so often seen.

The importance of restoring the sulcus, pits, grooves and fissures of the occlusal surface has been so exhaustively treated by Doctors Dewey, Young,<sup>1</sup> Ketcham,<sup>2</sup> Pruyn and others, that I feel I can do no better than refer you to these articles. One remark, however, I wish to make. It is the inclined planes of the cusps that function, and four or five elevations or humps scattered over the occlusal surface do not constitute an adequate substitute. On this point I will quote Dr. Damon, the dental anatomist at the University of Minnesota. He compares the masticatory apparatus to a mortar and pestle and says: "The uppers which are immobile would represent the mortar, and the lowers the movable pestle. Each fossa or embrasure of the upper receives a cusp of the lowers when the teeth are brought into occlusion, thus grinding or pulverizing the food." (*Fig. 2.*) Note the sharp buccal cusps of the uppers in comparison with the blunt linguals which fit into the fossæ of the

<sup>1</sup> *Items of Interest*, May, 1913, Young.

<sup>2</sup> *Items of Interest*, Feb., 1915, Ketcham.



lowers. These sharp buccal cusps perform an important function. You will note in this slide that after incision the bolus is thrown out against the cheek. There it is held. The muscles of the cheek act as an automatic feed, gradually pressing it against the buccal surface of the teeth to be shorn away by the sharp buccal cusps of the uppers as the lowers come into occlusion. (*Fig. 3.*) In this slide you will notice that the distal inclination of the mesio-lingual cusp of the upper molars is longer than the mesial inclination, and that the lingual grooves in the upper molars are directed toward the distal. Both of these factors tend to direct the food toward the distal to be further cared for in the act of deglutition. You will note in *Fig. 4*, with the teeth in normal occlusion that the point of each cusp in the upper is opposite either an embrasure or a groove, thus aiding in forcing the food along these avenues of escape in order that the occlusion may be closer at these places. Nature has provided the triangular ridges running from the points of the cusps toward the center of the occlusal surface.

The contact point is only one factor operative in the protection of the interproximate tissue from irritation. The mesial and distal marginal ridges perform this function to an even greater degree. We may make our contact so strong that it soon results in a separation or movement of the teeth, and still food will be forced by if we neglect to restore the marginal ridges on the proximate margins. In thus analyzing the significance of the occlusal surface I do not mean to imply that we should disregard environment, the age of the patient, etc. We should carve only as existing conditions indicate, letting the remaining teeth be our guide.

Gingival irritation is the chief objection urged against the banded crown, and the reason for this serious fault has been variously attributed to faulty root preparation, improper adaptation of the band, irritation due to the contact of the soft tissues or to the unnatural metal surface. No doubt any faulty technic or irritation long continued is sufficient to cause a pathology of this delicate tissue. But assuming that the root has been properly trimmed and the band has been closely adapted by the usual method of fitting a flat flexible strip of metal around the gingival circumference (*Figs. 5 and 6*), we should still be very far from having reproduced normal conditions. A flat band does not resemble the gingival contour of the enamel either in shape or function. (*Figs. 7-A and 7-B.*) A band of this shape may fit the root, but it does not fill the space occupied by the removed enamel, and the gum cannot hug the crown as closely as it did the natural tooth. An unfavorable condition is thus produced, since ultimate success depends upon the possibility of maintaining not only a healthy gum margin but also the stability of the alveolar process. On this account I believe I am justified in going into detail in analyzing this situation. The distinguishing characteristic of the banded crown where the band is to extend root-wise as far as the

gingival line, lies not only in the entire removal of the enamel, but in replacing this removed enamel as nearly as possible so as to duplicate its natural contour. Now, it is generally conceded that the band should extend root-wise as far as the gingival line; and as the gingival line is the most constricted portion of the tooth, if we are to have our band in close contiguity with the entire gingival circumference, the tooth must be scaled down at least as far as this constricted gingival line.

How are we to be sure when we have scaled the tooth sufficiently to obtain this necessary condition? Will the removal of the enamel be sufficient to give us parallel walls? Or does the dentin make up part of the gingival contour?

I have asked these questions of a great many dentists and have been strongly impressed with the almost complete absence of a standard of judgment. Dentists generally seem to agree that experience and common sense are, in this matter, the only guides possible. And yet the relations of the enamel and the dentin to the contour of the tooth are as constant as are any of the other anatomical features of the teeth. This being true, I see no reason why scientific principles for the guidance of this operation may not be laid down and adopted. The selection of such a standard makes new and searching demands upon our knowledge. We are confronted with the necessity of understanding the proportion of the tooth occupied by each tissue. We need to know the shape of the dentin denuded of its enamel, and especially is it important to know the form of the enamel as it approaches the cementum, as well as the amount of the variation of the gingival line, and the average length of the free gum margin. The length of the free gum margin may be made a very important diagnostic sign. This feature may be decisive on the question of whether it might not be best to employ another type than the banded crown. For when the gum line is normal—a condition frequently found in youth—we may safely infer that the peridental attachment is normal, i. e., the peridental fibers are attached as far crown-wise as the gingival line. Under these conditions it would be impossible to remove the enamel without doing a serious injury to the fibrous attachment which holds the free gum margin tightly against the gingival margin. An injury to the attachment would cause a recession of the gum and progressive loss of gum contour, for though the gum recedes normally as age advances, I am convinced it is bad practice to deliberately hasten the recession.

I simply mention the foregoing supposition in passing. It is a condition chiefly to be found in youth, i. e., is not the average condition, to be found where a crown is indicated, for where the tooth has been subjected to such an unfavorable environment as to require a crown either through extensive destruction by decay or loss of structure by poorly-placed fillings, the interproximate space will have been lost with more



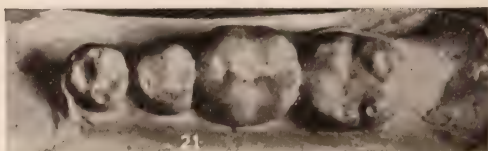
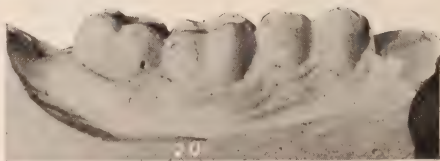
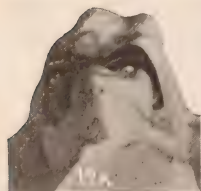
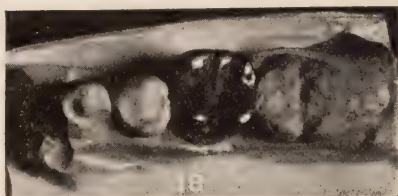
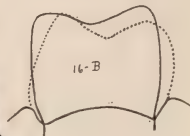
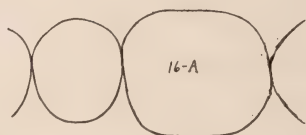
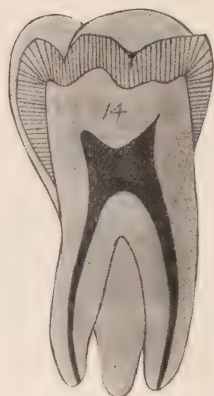
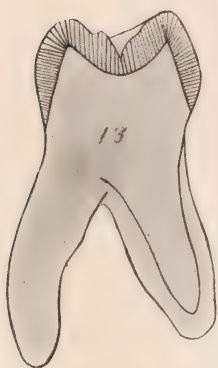
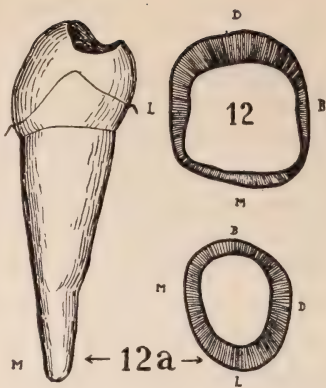
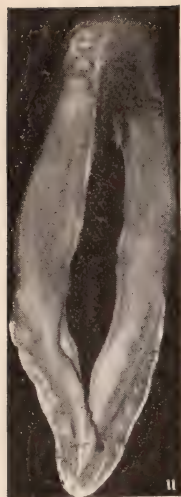


Fig. 11-A.—Mesial view of an upper molar denuded of all its enamel with the exception of a small piece on the buccal.

Fig. 11.—Labio-lingual section of upper cuspid. Note the same enamel and dentin relation.

A concrete illustration of all the essential standards proposed in the lecture may be gleaned from the following graphic comparison:

Fig. 17.—A buccal view is an example of the average crown. The gingival adaptation was fairly good. As it was a flat band it did not restore the gingival contour of the enamel. The free gum margin did not hug the crown.

Fig. 18.—Seen from the occlusal aspect it is out of alignment on the buccal and lingual. Square embrasures tending to retain secretions rather than to favor their dislodgment; broad contacts both buccal and distal.

Fig. 19.—As seen from the mesial aspect out of alignment, both buccally and lingually. Compare the occlusal planes of the crown with those of the adjacent natural teeth which are normal while the occlusal plane of the crown is actually reversed.

This particular case was selected because it was not an extreme case but the average conventional crown in vogue, i.e., the type of crown that is being employed by dentists to restore the natural crown, and yet it does not restore one single function or essential line of the natural teeth, and with the usual result. The effect of the unfavorable conditions produced a gingivitis, a decay of the approximating surfaces of the adjacent teeth and malocclusion.

Fig. 19-B.—A mesial view of the same case after it had been replaced by a crown in which the essential anatomical features had been restored.

Fig. 20.—Shows a buccal view of the same case.

Fig. 21.—Shows an occlusal view of the same case.

or less injury to and recession of the peridental attachment, in which case the situation admits of a banded crown; even then we may still have from one and a half to two mm. from the gingival line to the free margin of the gum.

The removal of the enamel from the dentin for a space of upwards of two mm. underneath the gum tissue, without doing injury to the gum tissue and the peridental attachment, requires so high a degree of surgical skill and is so laborious an operation, burdensome alike to the patient and the operator, that we should be quite sure of its necessity before insisting upon it as a normal procedure.

A description of the relative proportion of the tooth occupied by each tissue will, I think, be convincing on this point. The contour of the tooth is made up almost entirely of the enamel. Beginning at the gingival line by a beveled or chamfered edge, it gradually increases in thickness until the points of the cusps are reached, where we find the thickest enamel. The enamel will be thicker also underneath any ridges or elevations on the various surfaces. This thickness of enamel is formed by the increased convexity of the outer surface. The dento-enamel junction (or axial wall of dentin) passes toward the occlusal surface with little or no convexity, only a slight inclination toward the axial line of the tooth. Now, if this anatomical description is accurate, the removal of the entire enamel seems to be an obvious necessity if we are to have our crown in close contiguity with the entire gingival circumference.

While the anatomy just given will not be found in any published work upon the subject, Dr. Damon, the dental anatomist at the University of Minnesota, has thought this matter of such fundamental importance as to warrant the undertaking of a great task in grinding speci-



mens, taking measurements and making charts. It is hoped that a practical application of these findings will tend to materially advance crown work to a high rank among modern hygienic dental procedures.

In order that we may have a more accurate perception of the difference between the form of the tooth at the free margin of the gum and at the gingival, let us study these portions of a lower first molar somewhat in detail. You will note in the case of a lower molar and a lower bicuspid, the difference in the outline form of the dento-enamel junction and of the periphery of the crown at this point. Now, the measurement of the outline of the dento-enamel junction at this point is practically the same as the measurement of the outline form at the gingival line. We easily can verify this by taking an extracted tooth, obtaining the shape at the gingival by shaping a brass ligature wire around it at this point, and then grinding down the occlusal until we have reached the free margin of the gum. The discoloration and etching of the enamel will aid us in determining it on the buccal and lingual and the points of proximate contact on the proximate surface. Now, place the outline form of the gingival which has been obtained with the wire ligature over the dento-enamel junction at the free margin, and I think it will be found almost identical.

Thus, if we are to obtain a perfect adaptation of the band at the gingival the removal of all the enamel at this point is obviously necessary. In scaling the enamel we always should bear in mind the points at which we should expect to find it thickest. Our sections show a thicker deposit upon the mesial and distal than upon the buccal and lingual, and thicker upon the distal than mesial. One of the most difficult points to scale is the disto-lingual angle point, and here we shall find the thickest enamel. This we might expect, as the mesial root has two canals and is wider bucco-lingually than the distal root which has only one canal, while the measurement of the periphery of the crown is the same on the distal as on the mesial.

In the upper molars there usually is found a thickening of the enamel upon the mesio-lingual and the disto-lingual angle points, which it is especially difficult to scale. This thickening probably is due to the lessened mesio-distal diameter of the lingual root over that of the two buccal roots, while the mesio-distal diameter of the crown upon the lingual remains about the same as that of the buccal. An important point to note in drawing (*Fig. 1*) (upper first left molar; this view obtained by cutting off the distal convexity) is that the enamel passes higher gingivally on the lingual than upon the buccal; and in *Fig. 3* (a buccal view at the point of proximate contact) that it passes higher on the distal than on the mesial. This is an important anatomical point to remember in scaling the roots, as well as in trimming and festooning the band.

From the want of care taken to avoid lacerating the gingival, one is inclined to think that a great many dentists do not fully appreciate the

importance of maintaining a healthy free gum margin. I doubt whether a traumatic injury to this tissue ever may be fully repaired.

(*Fig. 1.*) The free border of the gum is covered with a moderately thick, dense epithelium coating, but that part which folds in, lying next to the neck of the tooth, is composed of softer and more delicate cells than other portions. The lymphatic glands are larger and more numerous just in this neighborhood than in other portions of the membrane. These glands lie very close to the gingival aperture. That portion of the connective tissue in close conjunction with the tooth is not covered by the epithelium—in other words, there is no attachment of the epithelium to the root of the tooth, and it seems to be through this space that the cells, so-called salivary corpuscles, found under the free border of the gingivus, pass.

Dentists generally are familiar with the various axial surfaces—mesial, distal, buccal, and lingual. Nevertheless, it may be worth while to make certain points clear by presenting a comparison between the most favorable natural forms and the most glaring typical faults frequently found in the artificial crown. While the same elements of design are approximately applicable to all the posterior teeth, the slight variations which exist should not be neglected, but noted and copied in the artificial crown, for they have a decided bearing upon the production of favorable conditions. For the purpose of illustrative comparison, I shall select the first lower molar.

The voluminous literature devoted to showing how important it is to preserve the normal width and form of the interproximate space, and the marble-like contact, might seem to make further emphasis upon these points superfluous. And yet, the prevalent failure to carry out, in our crowning operations, even the most fundamental and elementary doctrines, leads me to the conclusion that the essential nature of the concepts underlying the term contact have not been fully grasped. Maintenance of the symmetry of the arch is to a large extent dependent upon the contact-point; the proper form of the contact-point is dependent upon the form given to the embrasures; and again, we cannot make the proper embrasures, if the buccal and lingual surfaces are out of alignment.

But it will be advisable to enter somewhat more into detail. The majority of the crowns I have examined have contact with some portion of the adjacent tooth. But if these contacts are not precisely opposite, the contact surface is broadened, and the embrasures are unduly narrowed. While the first lower molar is somewhat trapezoidal in shape, the mesial surface is flattened bucco-lingually, and slopes from the buccal toward the axial line of the tooth as it goes toward the lingual. Its contact with the second bicuspid is thus brought almost on a line with the buccal cusps, which results in a larger lingual than buccal embrasure. The distal surface is usually convex from buccal to lingual



bringing the contact point slightly nearer the center of the tooth; but owing to the trapezoidal form the lingual embrasure also is wider than the buccal. Now, the wider lingual embrasures evidently allow a larger bolus of food to pass to the lingual, to be returned again to the occlusal surface by the action of the tongue. I do not believe it possible to emphasize too strongly the necessity of properly reproducing these embrasures. They undoubtedly extend the areas of immunity by subjecting a larger proportional surface of the tooth to the process of attrition. By allowing excursions of food-stuffs to pass through them during mastication, they are a factor in the production of favorable conditions. It is therefore highly unfortunate that the form usually given to these embrasures is such as rather to promote the retention of secretions and stagnant saliva, than to favor their dislodgment. It frequently happens even in crowns, when the contact-point is properly placed, that the form given to the buccal and lingual surfaces is such as to render impossible the production of a most favorable form of embrasure. We have here the outline cross-section of the buccal, occlusal, and lingual surface viewed from a mesial aspect. The dark line represents the conventional form usually to be seen in artificial crowns. The objection to giving the buccal surface this form is four-fold: *First*, it carries the occlusal third out of alignment; *second*, it prevents the proper formation of the buccal cusps; *third*, it makes a natural reproduction of the buccal embrasures impossible; *fourth*, it does not protect the free gum margin from the impact of food-stuffs. These reasons should be sufficient to stimulate a reform in the prevailing practice.

The various anatomies describe the buccal surface as convex in all directions. Nevertheless, it is my observation that the highest point of the convexity is along the cervical third in the best-formed teeth, i. e., it is along what might be termed the cervico-marginal ridge, the line from this ridge to the occlusal being much longer than the line from this ridge to the marginal line. The reproduction of this form makes it possible not only to produce embrasures of the most favorable design, but it protects also the free gum margin, by allowing the food to sweep over the gums instead of forcing it under the gum margin.

#### DISCUSSION

DR. M. M. HOUSE: I feel assured every man in this hall has been wonderfully repaid for the time he spent here this afternoon. Now, Dr. Orton has called your attention to principles; not only principles involved in crown and bridge work, but he has called your attention to principles involved in many different operations of the dental profession who are honest in producing the proper kind of dental work. While he has called your attention to those principles, I wish to add one other principle that makes it possible for us to enjoy and see and hear the principles given and taught by this great master. That principle is the principle of unity, harmony and good professional fellowship. In speaking of that, I can do nothing more than to tell you of the great blessing our professional organization is: that it makes possible for us to hear and see these great principles and get them from such teachers as we are having the privilege of hearing at

the present time. That is what makes it possible for a man like this to enjoy these treats that he has enjoyed in life. I cannot express them better than by quoting:

"It's an easy world to live in if you choose to make it so;  
 You never need to suffer, save the griefs that all must know;  
 If you'll stay upon the level and will do the best you can  
 You will never lack the friendship of a kindly fellow man.  
 Life's an easy road to travel if you'll only walk it straight;  
 There are many here to help you in your little bouts with fate;  
 When the clouds begin to gather and your hopes begin to fade,  
 If you've only toiled in honor you won't have to call for aid.  
 But if you've bartered friendship and the faith on which it rests,  
 For a temporary winning; if you've cheated in the tests,  
 If with promises you've broken you have chilled the hearts of men;  
 It is vain to look for friendship for it will not come again.  
 Oh, the world is full of kindness, thronged with men who want to be  
 Of some service to their neighbors, and they'll run to you or me  
 When we're needing their assistance if we've lived upon the square,  
 But they'll spurn us in our trouble if we've always been unfair.  
 It's an easy world to live in; all you really need to do,  
 Is the decent thing and proper, and then friends will flock to you;  
 But let dishonor trail you and some stormy day you'll find  
 To your heart's supremest sorrow that you've made the world unkind."

Now to me that is the life of this man. I say this because of my experience of having had the opportunity and the blessing of having had his acquaintance and his many guidances in the past two years, and it is with great timidity that I attempt a discussion of so scientific a subject given you by a master, originator, teacher and producer in this great and scientific art. I feel myself in the position of the disciple in the Holy Writ, who having sat at his Master's feet said, "Whereas I was blind, now I see." It was by a stroke of good fortune and great blessing that I received the great opportunity of sitting at the feet of this genius and receiving from his everflowing fountain of knowledge the inspiration that has enabled me to render health-producing instead of disease-destroying restorations in the crown and bridge art. We are all well aware that crown and bridge work has been the scandal of the dental profession and no art advances *en masse*, but a little here and a little there, and it is due the increasing, untiring efforts of this good master that this standardized technic has been evolved. No branch of the dental art, with the possible exception of root-canal work, has received as much destructive criticism and as little constructive criticism as has this. I would therefore say that the day is now at hand when profession without production in its truest significance is *passee* both as well as regards the operation and the operator. This subject has been fully exhausted by the lecturer, and I shall not attempt to discuss, but only hope to emphasize some of the most vital principles so completely expounded.

First, and most specifically bear in mind that the masticatory function of the teeth is the very reason for their development. In each case of crown and bridge work we have a true guide as to the most efficient masticatory form indicated. That guide being the remaining teeth in the mouth on which we seek to operate; also they furnish as true axial form, embrasure form and contact form. It is unnecessary to dwell further along this line other than to call your attention to the completeness as outlined by the essayist. It is unnecessary for me to further dwell on specific points, as each and every one has been most thoroughly and completely covered, as to the technic of proper root preparation with reasons thereof.

In conclusion I wish to say I had the fortunate opportunity, in company with Dr. J. M. Hale, of being a guest of Dr. Orton and of taking this work in the University of Minnesota, as also in his private office, and my testimony is that I saw with my own eyes, the simplicity, accuracy and efficiency of the technic Dr. Orton will demonstrate to you here this week. He says that a technic is an easy road with many guide posts, and this he has certainly proven to be true, so simple in its application in this technic that students in the University of Minnesota under Dr. Orton's instruction are pro-



ducing in the crown and bridge art what ninety-eight per cent. of the dental profession at large are not accomplishing to day.

"How much do you want to succeed?  
Now eager are you to be great?  
Are you willing to study and read,  
To work and with patience to wait?  
Are you willing to pass up the joys  
That tempt you and coax you today;  
To turn a deaf ear to the boys  
Who would lure you to join in their play?  
Are you willing to pay in distress  
And denial the price of success?

How strong are your dream and desire  
To stand at the head of your clan?  
Are you willing to stick when you tire  
And still play the part of a man?  
When the struggle grows bitter and hot  
And your muscles are weary and sore  
Will you quit with the little you've got  
Or stay there and battle for more?  
Oh, we all can be brave at the start,  
But the finish is proof of the heart.

If you're willing temptations to shun,  
To be deaf to the pleasures that call,  
If you'll stand to a task till it's done  
And get up again when you fall,  
If undaunted you'll suffer a blow  
And still keep yourself in control,  
Nor lose the ambition to know  
The joy of your self-chosen goal.  
Beyond doubt you shall reach it some day,  
But all this is the price you must pay."

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## GENUINE PROFESSIONAL ETHICS

Members of the California State Dental Association have adopted a plan for reinstating fellow members of the profession discharged from military duties with practically the same clientele as when they left their offices, according to Dr. John E. Gurley, secretary of the association.

California has sent about one hundred and fifty dentists into military service. Already about a dozen have returned and have reopened their offices. Through the co-operation of members of the association, their former clients are urged to return to their former dentist. So far, says Dr. Gurley, the plan has been very successful.

## TREATMENT OF ROOT CANALS\*

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FORSYTH DENTAL INFIRMARY FOR CHILDREN

**I**N THIS PAPER I shall consider the pathology of root disturbances; give a method of treatment; speak of the use of antiseptics; call your attention to the effects that may be produced by the application of the principles of capillary attraction; and I shall also briefly discuss the nature of the infections that occur about roots.

The object in root-canal work is, I believe, to sterilize and to block against subsequent infection. In the attempt to accomplish this, we have to consider more than the sterilization and the filling of the canal; we have to consider the sterilization and the plugging of the tooth structure itself.

Whenever an inflammation of the pulp or of the peridentium exists for any length of time, the dentinal structure of the root undergoes an alteration; the dentinal tubuli disappear and eventually a hyaline condition exists. This hyaline structure is crystalline, as Dr. Warren, of the Massachusetts Institute of Technology has shown me. This structure is sealed by nature, for it will not take up the most penetrating stains; this should be taken into account in root filling and in the interpretation of roentgenograms.

While this structural alteration is going on, the tubuli are full of infection. This infected dentinal substance should be sterilized and also filled. Our ordinary methods do not accomplish this; we obtain only surface sterilization. This I have proved by boring out canals after they have been treated in the ordinary way, and by culturing the shavings; a growth always has resulted if the cultural tests have been properly carried out. Indeed, dentinal sterilization rarely is produced in ordinary tooth cavity preparation. Nicely-prepared cavities upon examination will show a bacterial growth. If we are to carry on our work according to surgical principles, we should sterilize our cavities. It would seem that as little excavation as possible with sterilization of the remaining dentinal structure, is the scientific procedure. Crooked and inaccessible roots, often many and unsuspected foramina, need to be treated and filled.

We may effect a complete sterilization of all such tissue and at the same time fill even the diseased dentinal tubuli with metallic silver by a very simple process. This blocking of the diseased tissue against subsequent infection is done in a very perfect manner. It is known that a tooth may act as a permeable membrane. Treated in the manner that I shall more fully describe, all such osmotic action is prevented.

Our best canal work today is open to the criticism that it entails a most elaborate technic; this is because the process is largely mechan-

\*Presented at the meeting of the Ohio Dental Society, Columbus, Dec. 1918.



ical. The process that I have reference to is scientific, simple, requires but a short time, almost no equipment, and the results are infinitely more perfect.

It is now nearly a year and one-half since this has been tested on an extensive scale, and the clinical results fully confirm our expectations. In a record of about four hundred cases done by six operators at the Forsyth, there were only three extractions, and in each of these three cases the operators are ready to apologize.

The reports of the work in the army here and abroad, and from various large clinics, have been eminently satisfactory.

Let me describe to you the preparation of the solutions necessary for this work. Prepare two solutions as follows:

*Solution A:* Three grams of silver nitrate crystals, dissolve in 1 c.c. of water. When dissolved cool a little and add 2.5 c.c. of 28 per cent. ammonia.

This should give a murky solution; it should have no odor of ammonia. Allow it to settle; the clear top solution should be used. Keep in a dark glass bottle. Then prepare:

*Solution B:* Which consists of a 25 per cent. solution of formalin, and keep this in a separate bottle.

If some of Solution A is poured into a test tube, or small glass vial and Solution B is added, a heavy precipitate of metallic silver occurs, making a mirror upon the sides of the receptacle. The chemical reaction that occurs is one of reduction. Many substances will reduce the silver from this solution, but we believe formalin to be the best for our purpose.

We are dealing with a powerful antiseptic. There is no question as to its ability to produce sterility. This, we have demonstrated by many careful tests. Anyone who does not get sterility has not mastered the technic or does not carry out his tests with the exaction demanded in such work. It is to be remembered that any antiseptic will destroy living tissue before it will bacteria, and it is better to confine this solution to the tooth proper. If it goes through a root-end it will cause pain, if the tissue about the root-end is intact. It is for use within the tooth substance and under certain circumstances may be used outside the tooth-root. The distinction between dentin and cellular tissue always must be held in mind. The proper antiseptics to use in the soft tissues are Dakin's solution, eusol, physiological salt. This has been shown in the war surgery. These solutions are somewhat antiseptic; they are solvents of mucin, pus and other detritus, and eusol has a different osmotic pressure than the blood, causing an exudation of the serum, which is, of course, the best of antiseptics. These preparations then clean the tissue and induce the destruction of bacteria in the natural way, promoting healing. They do not injure healthy tissues. There are a number of preparations on the market that are based on these principles.

As a preventive measure the application of this material is very effective. In simple caries, the gums must be protected with cotton rolls; the teeth bathed in Solution A. Then apply Solution B, and after a moment absorb the solutions and wash out the mouth.

In the treatment of deep caries we are approaching the pulp, and this is cellular tissue. This silver preparation would injure it; therefore I recommend mixing a paste of zinc oxid and eugenol, adding a crystal or so of silver nitrate and smearing this over the bottom of deep cavities. This will become quite hard. Follow by applying first, a drop of Solution A, followed by a drop of Solution B; repeat about three times in order to reduce a considerable amount of silver. Dry the cavity and fill with any material you like. The cavity is sterile and the fine anatomy of the tooth is filled with finely-divided silver.

An application of the zinc oxid-eugenol-silver-nitrate paste may be put directly over an exposed pulp. I never have known one to ache when this was done.

In the case of a dead pulp, apply the material freely before entering the canal with the instruments. If the putrescent pulp is left intact the material will follow along its entire length, no matter how fine or how crooked the canal, and it will render the pulp stiff, dry and sterile. The material will stop short at the point where the tissue is living. This pulp never need be removed, but I should remove it and treat again with the silver, being careful not to work it through the end of the root. The treatment has rendered the canal sterile and impregnated the diseased dentinal structure with metallic silver. The bulk of the canal may be filled with anything; it does not matter. The microscopic anatomy and the apices of the tooth already are filled.

The sterilization of any pulp canal is affected in the same way. I depend largely upon capillary attraction for conducting the material to its proper place. If you will take a laboratory tooth and open the pulp chamber and flood it, you will see that the silver comes out at apices of the root, no matter how fine the canal.

Reports have come to me of severe after-pain; this is due to faulty technic and to disregard of the principles on which antiseptics are to be used. Pain means that the material has been forced through the apex, and it means nothing else. Place a broach into the canal, apply a drop of the silver solution, let it run along the broach, lightly lift the broach and lower it; the material will go to the very end. Then apply in the same manner the formalin; the silver reduction immediately occurs. Repeat three times; then dry, apply Solution A alone; follow with eugenol, dry and fill. This last application removes any possibility of formalin excess. Such men as are accustomed to handling formalin will have no trouble. Formalin is a most excellent root-canal antiseptic; but there are men who do not understand its use and they have nothing but trouble. There should be no pain whatever; if there is, it will sub-



side and there is no harm done. But it means that one should correct his technic. Keep away from the apical region with instruments. What the object in forcing a foreign material through a root-end in any case is, I cannot see. Such a process disturbs the delicate adjustment of vessels and tissue that should properly cover the root-end, and is unscientific. Nature is wonderfully tolerant and will encyst many foreign substances; but why ask it of her?

When we have a fistula, treat the tooth once with the silver solution; force Dakin's solution through the fistula once or twice, and if this does not cure it, repeat again. At the last treatment apply the silver treatment several times in succession and fill.

With a blind abscess do the same thing.

So much for a general outline of the manner in which to use this method. More practical points will be seen in the clinic given by Dr. Siegfried.

I have mentioned capillary attraction as a factor in carrying this material to its desired place. Capillary attraction will carry the medicaments far beyond what usually is supposed. Place a fine glass tubing upon a drop of water and note the extent of the rise. Drill a hole in the crown of a laboratory tooth with a number one-half round bur, as far as the pulp chamber; clear out the shavings and stand it upright upon a drop of the silver solution; after two minutes grind off the side of the tooth and lay it in the sun. It will be seen that the silver has permeated into the tooth and followed the canals to the very end; this is what may be made to happen within a tooth. An instrument placed within a canal will reduce its size; it will remove airlock; this will act as an aid to capillarity. The force that causes liquids to rise in small tubes, ink in blotting paper, moisture in absorbent cotton, and oil in wicks, also will cause liquids to rise in teeth. (See illustrations).

In this case but little instrumentation is necessary. An instrument placed in the larger canals will reduce the size and thus aid capillary attraction; for this force is the greater in small tubes; it will prevent airlock. But if the cavity and canals are flooded, capillary attraction will carry the liquids to the very end of the root and into all fine canals as well as into the substance of the tooth itself. This requires, perhaps, from three to five minutes. In some cases moistened cotton points are better to use than broaches.

Dental and medical literature has been flooded with articles setting forth the dangers that may arise from infections of the type that are found about diseased tooth-roots. If a small percentage of these representations are true, then an edentulous condition can be the only safe thing. There are many things to be considered before accepting too fully this theory. The so-called streptococcus viridans has been the micro-organism held to be responsible for this danger. Two classifications of streptococcus are adhered to at the present time; one, the hemo-

lytic, so termed because it acts on blood to clear up a zone about its colonies; the other, the non-hemolytic, which does not attack the blood in media to any appreciable extent. The non-hemolytic streptococci are heterogenous. That is, this variety is mixed and confused in its characteristics. It is to this class that the so-called viridans belong. These micro-organisms are termed viridans because the colonies are green upon blood-agar; so do colonies of various other micro-organisms. But the characteristic that immediately concerns us is that they are more saprophytic and "*cause disease only under exceptional conditions of pre-existing infection or lowered resistance.*" "Even in sub-acute bacterial endocarditis, when this type of streptococcus is found constantly in the blood stream, the growth of this variety of streptococci on a *previously-injured valve* seems purely saprophytic." These micro-organisms are present in all healthy mouths. "Their absence only has been observed where frank infection by other bacteria has resulted in their temporary exclusion." They are present even in dust. This is the type that has been isolated from dental abscesses; no one ever has been able to produce a dental abscess by their injection; it is only about pulpless teeth that abscesses occur. Here the tissue resistance is lowered. Keep up the resistance of the oral tissue and the normal mouth flora never will enter it. And what holds true in the mouth in regard to infection of this type, holds equally true in any part of the body. These infections are secondary.

On the other hand, hemolytic streptococci rarely are found in the mouth. Indeed they have a very limited occurrence in man, but they possess highly developed invasive and disease-producing qualities. They are the cause of "milk epidemics, purulent infections, abscesses; and they play a part in broncho-pneumonias and in many other diseases."

But little is known of diseases attributed to the teeth. The harm in the theory is two-fold: *First*, it has caused the ruthless extraction of teeth; *second*, it has allowed grave complications to result, because major causes have been overlooked while the attention of the medical and dental practitioner has been fastened upon a minor factor.

Dentistry need not admit that it is a failure; nor should dentistry allow medicine to make a scapegoat of the teeth for the bodily ills about which no one, as yet, knows much.

The teeth are an important and necessary part of the digestive apparatus and every effort should be made to save them. I believe that we are able to do this scientifically and safely so far as the rest of the economy is concerned. An elaborate technic is not necessary. If our science is sound, its application is direct and simple. We are thus able to serve the masses.

The method of root-canal treatment that I have described has been tried out here and abroad on an extensive scale, and the reports received have confirmed the wisdom of its adoption.



## REMARKS INTERSPERSED WHILE READING THE PAPER

In my talk I am endeavoring to speak of facts, not theory. This method has been thoroughly tried out in the French Army and in the Sanitary School of the Expeditionary Force of America; here they report that it is the only thing that they could use. In Great Britain, in Canada and in Holland it has been in use; in some of our army cantonments as well as the out-going ports it also has been used. The saving of a great number of teeth that otherwise would have had to be extracted has been made possible; these teeth have been saved with but few treatments.

The white blood corpuscles are a part but not all of the natural defenses against bacterial invasion. The human system possesses a very formidable means of protection against infection, particularly against the normal bacterial flora of the digestive tract.

Man is not hermetically sealed and "point of entrance" as ordinarily interpreted is meaningless. No attention is paid to "point of entrance" in scarlet fever, chicken-pox, diphtheria, small-pox or any other communicable disease. One comes into contact with a carrier and conditions being favorable acquires the disease. It is all a point of entrance from one end of the alimentary canal to the other.

Under ordinary circumstances active and virulent infections are met by the protective processes of the blood stream and the tissue cells and are destroyed; during this process poisons are set free and the individual is ill. Soon an augmented resistance is acquired and a specific immunity exists.

Infections are of course introduced into the body in other ways, for example, malaria, where the parasite is incubated in the body of the mosquito and injected from their salivary glands directly into the circulation. This parasite attacks the cells of the blood itself. The hook-



Fig. 1



Fig. 2



Fig. 3



Fig. 4

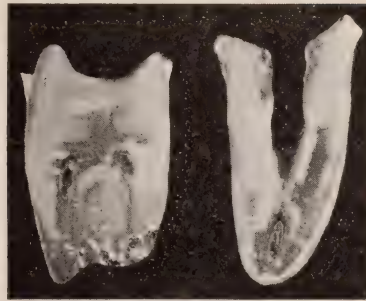


Fig. 5



Fig. 6



Fig. 7

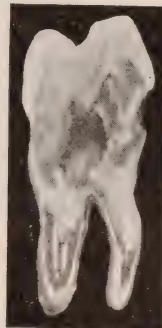


Fig. 8



Fig. 9



Fig. 10



Fig. 11



Fig. 12





This shows the effect produced by capillary attraction. These teeth were drilled into from the grinding or cutting surface until the pulp chamber was reached. They were then stood upright on a drop of the silver solution for varying periods of time, 20 seconds, 3 minutes, 5 minutes, etc.

worm, which is supposed to enter through the soles of the feet, shows another method of entrance of disease into the body.

But in diseases about the teeth, we find the normal mouth flora growing in tissue, the resistance of which has become lowered. This is similar to what occurs in those circumscribed or local areas that some term "foci of infection." Precisely what occurs in the one, occurs in the other. That is, so far as infection goes, what occurs in pyorrhea or about a pulpless tooth also occurs in, say, gastric ulcer. Both represent limited and defined areas. The introduction of micro-organisms of streptococcus viridans in anything like a reasonable dose, and by that I mean not an overwhelming dose, into the bodies of animals will not produce the disease. The resistance of the part must first be lowered; the infection is secondary. Streptococcus viridans will not attack healthy tissue. No one has yet succeeded in producing pyorrhea nor a granuloma by the injection of any micro-organisms or group of micro-organisms. A condition that simulates pyorrhea may be produced by diet, however. You will see an account of some of my studies upon this

subject elsewhere. As for gastric ulcer, it is very common among laboratory animals; Mann produced it in ninety per cent. of his animals by removing the adrenals; it may be produced in a variety of other ways.

Now no one can logically explain so-called secondary foci of infection until they can explain the primary focus. Yet this is exactly what is being done.

In my paper I have spoken of the confusion that exists regarding streptococci. It is possible to get diphtheroids to assume a streptococcal form. *B. Bifidus* will do the same thing, as I have shown, and so will other micro-organisms, but the division in the classification of streptococci that is quite definitely adhered to is the distinction between the hemolytic and the nonhemolytic. The streptococcus viridan belongs to the last class and is non-virulent or very low in virulency, nor can it be made to become in any sense a virulent micro-organism. Why this common mouth micro-organism should be chosen as the basis for the idea that the teeth *cause* general diseases is not clear to me.

We still have five inches of mouth, the teeth surrounded with thick fibrous tissue, and thirty feet of intestine with its tissue of absorption. and not thirty feet of mouth and five inches of intestine.

As one notable man has said after examining the teeth of soldiers in the British army, "If the teeth had much to do with general disease the whole English race would have been exterminated long ago."

The trouble with this theory is that the medical profession is heaping its deadwood on to the dental profession, and again very distressing things have occurred, because being satisfied with such a superficial interpretation of disease, very grave conditions have been overlooked until they have gotten beyond control. A large amount of very inexcusable extraction also has occurred.

The viridans in the mouth is no serious matter. There is no such thing as a sterile mouth nor has nature ever intended that there should be, and if we must have micro-organisms there, we are fortunate not to have any that are more virulent as constant inhabitants. These do not attack healthy tissue. Viridans never localize in a joint without a reason and that reason is previous injury to the part.

Primary and secondary foci are independent processes. The removal of one affects the other only on the basis of taking the load off the resistance. *Tissue resistance is the thing to aim for in mouth treatment*; this is the governing factor in these conditions.

But I am far from my original topic.

In ordinary cavity preparation we do not get sterility of the teeth; I have examined many cases and they all show infection.

This material is simply an ammoniacal solution of silver nitrate. I have given the formula; it will penetrate only diseased dentin; it



produces a very exceptional degree of sterility; it not only produces sterility, it also blocks the tubuli with finely-divided silver. Silver nitrate does not produce any depth of sterilization nor does formalin. The usual methods produce merely surface sterilization. I take three grams of silver nitrate and add one c.c. of distilled water and by the aid of a little heat dissolve the crystals; then add two and one-half c. c. of twenty-eight ammonia; this throws down a black precipitate of silver oxid which is soluble in an excess of the ammonia. Some of the black precipitate is left which shows that there is no excess of ammonia.

My colored girl made this and she is a better cook than chemist.

Many substances will throw down silver, but I prefer formalin. Test the action yourself

In pulpless teeth the first thing to be sure of is thorough application. Work it down into the putrescent pulp; I put in a good dose of the silver, with a glass tube, and puddle it in, and let the shreds of organic matter absorb it to the very end of the root; if you put in enough you will accomplish this. But in healthy tissue the albuminous matter will coagulate and limit the action. After you have done this the pulp is stiffened and sterile.

*Tissue resistance is an all-important factor.* If the streptococcus viridans caused all the troubles attributed to it, all you have to do is to inoculate your patient with a serum or vaccine from this micro-organism and he will become immune.

It is not true that pneumonia is caused by diseased teeth. You sometimes find pneumococci in pyorrhetic teeth; not always. In pneumonia you find first this germ in the blood, then in the mouth, and of the type that characterizes the disease.

I have said more than I meant to say, yet not half I might say. I thank you.

10 Exeter Street.

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## RETURN OF OVERSEAS FORCES

The War Department expects that embarkation to March 1st will total 400,000, leaving 1,600,000 men to be brought home. March embarkations will reach 200,000, and may go to 225,000, depending on the usefulness of interned German liners. In April a movement of 225,000 seems assured with 250,000 as a possibility. The rate should then increase to an assured summer capacity of 300,000 a month. It will thus be possible to return all the troops before the end of next summer.—*Army and Navy Journal*.

THE IMPORTANT BLOOD VESSELS AND NERVES INVOLVED  
IN PERIAPICAL TREATMENTS AND OPERATIONS\*

BY J. F. ALCORN, D.D.S., ST. LOUIS, MO.

IN MEDICAL or surgical treatments of injuries to the apical portion of the teeth and the surrounding tissues, little thought generally is given the blood and nerve supply, beyond the mere factors of hemorrhage and pain.

In order that our clinical procedure be correct, that we work with an understanding of the possibilities of tissue regeneration, that a correction be established which shall be permanent, comfortable and continually aseptic, that to avoid nervous shock the patient shall be made as comfortable as possible throughout the operation, some knowledge must be had of the arterial and nerve supply to the part affected and those adjacent thereto.

The gum tissue and alveolar processes are richly endowed with both blood vessels and nerve fibers, and in this fact lies great possibilities in tissue regeneration. The pulps of the teeth and pericementum, especially in the young, also are well supplied, but injuries to these tissues cause permanent degeneration.

The teeth of both jaws, the pulps, the pericementum, the periosteum, the alveolar processes and the gum tissue receive their blood supply from the external carotid artery through the internal maxillary branch. The nerves to the same parts have their origin in the second and third divisions of the fifth cranial, the second to the maxilla, the third to the mandible.

In the maxilla the molar region is supplied by the posterior dental artery from the alveolar branch of the internal maxillary, and the posterior superior dental nerve, both artery and nerve descending upon the tuberosity of the maxilla. Both split up and enter the bone through the same several foramina about two cm. superior and slightly posterior to the third molar. They supply the pulps and pericementum, the alveolus and buccal gum tissue in this region.

The lingual gum tissue or the posterior part of the hard palate is supplied by the anterior branch of the posterior palatine artery, and the anterior palatine nerve. Both traverse the posterior palatine canal emerging at the posterior palatine foramen slightly less than half way to the median line and on a line with the third molars.

The superior bicuspid and the six anterior teeth are supplied by the anterior dental branches of the infraorbital artery and the middle and anterior superior dental nerve. Arteries and nerves take the same

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\*One of a symposium of papers on Some Root-Canal Problems read before the Missouri State Dental Association, April, 1918.



course, the infraorbital artery and nerve in the infraorbital canal slightly posterior to the infraorbital foramen, travel down the anterior wall of the antrum of highmore to the teeth, alveolar process and the labial gum tissue. The anterior portion of the covering of the palate, or the rugae is supplied by the internal branch of the sphenopalatine artery and the nasopalatine nerve. Both emerging through the bone at the incisive foramen, just posterior to the centrals in the median line.

The mandible is supplied by the inferior dental artery and the inferior dental nerve. They enter the bone at the mandibular foramen on the internal surface of the ramus of the mandible. They supply the teeth and bone and the labial and the anterior part of the buccal gum tissue.

. The buccal mucosa of the molars receives sensory nerve filaments and arterial supply from the buccal nerve and artery.

The lingual gum and the anterior lingual periosteum and alveolar process is supplied by the lingual artery and nerve which branches from the inferior dental artery and nerve just before the latter enters the mandibular foramen.

Thus briefly, is explained the main nerves and arteries to the parts in which we are most interested.

Finally, considering more minutely the subject matter, that is the periapical region, we find as before stated, that in the young, the pulps of the teeth and the pericementum are comparatively large and vascular and in the old becomes much attenuated and less vascular; the pericementum less resistant to degeneration. The blood to these tissues is distributed to the pericementum and by collateral circulation supplies the pulp.—(*Stine.*) The nerves enter the pericementum and pulp canal by several trunks in the apical tissue.

The disposition of the arterioles in the pericementum, insures nutrition to the peridental membrane in case of loss of apical tissue as in granuloma or apical abscess, and also insures a collateral blood supply to the pulp in case of loss of main arterial trunks as for instance, in operations upon the inferior dental or infraorbital canal, in which case the pulps do not die.—(*Stine.*)

Assuming then, that we are all fully acquainted with the anatomical structures and the proper technic required, permit me to conclude with the query—what shall be the panacea in treatment or operation on periapical tissue disturbances?

WHAT BASIC PRINCIPLES OF PHYSIOLOGY ARE INVOLVED  
IN THE DESTRUCTION OF BACTERIA WITHOUT  
THE DESTRUCTION OF TISSUE CELLS?\*

BY D. G. STINE, M.D., COLUMBIA, MO.

**F**OR DECADES the medical profession has been searching for some substance that, while deadly in its action for bacteria brought in contact with it, would still be harmless to normal tissue cells, even young growing cells.

The search has been for some substance that has a harmful affinity for bacterial protoplasm, just as curare has for the cells composing the motor end organs of motor nerves. So far medicine has discovered only two such substances—*first*, quinin and its action on the plasmodium malariae; *second*, salvarsan and its action on the spirochæte pallida.

In these there is undoubtedly an affinity of the drug for the specific micro-organism, but they cannot be said to be absolute in their ability to rid the body of the organisms for which they are specific, nor are they absolutely harmless in their action on body tissue.

The war brought forth numerous attempts to find solutions in the presence of which bacteria die, but injured tissues can start their process of repair.

This subject that has been given me is an enormous one and applies to all tissues; so I will limit my essay to the destruction of bacteria in and about the teeth without the destruction of tissue cells.

The subject falls naturally under two headings—*First*, the sterilization of the mucous membranes of the mouth and the soft tissues about the teeth. Every bacteriologist knows that after a few hours of gargling and mouth-washing with weak solutions of disinfectants such as Dobells, 10 per cent. alcohol, that it is almost impossible to obtain a growth of bacteria from an infected throat. However this must be due to the mechanical washings of the surface, because bacteria will grow in culture medias made up of these solutions; and simple non-disinfecting washes, as weak salt and soda solutions, will produce the same results.

Stronger disinfectants destroy the cellular structure of the mucous membranes. Tincture of iodine is especially deleterious to this delicate protecting structure.

Where there is suppuration of the soft tissues around the teeth the method of Carrel-Dakin is the only procedure to my knowledge that can sterilize the pus pockets and not harm normal cells. That is the laying open of pus pockets and irrigation with dichloramin solution, or

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\*One of a symposium of papers on Some Root-Canal Problems, read before the Missouri State Dental Association, April, 1918.



the application of a dichloramin paste. It has been proven that young tissue cells will grow in this solution and that bacteria are killed by it.

As the proper chemical sterilization of a wound or lesion can be carried out properly only by a strong germicide, which is non-toxic and non-irritating, it is plain that none other answers this purpose in this locality. Tincture of iodine stronger than 5 per cent. is too irritating to be used on mucous membranes and weaker than this it is not germicidal. What is true of iodine also is true of mercury-bichloride and the phenol group.

#### RESULTS FROM ATTEMPTS TO STERILIZE FOR INJECTION OF NOVOCAIN.

*Second*, the sterilization of the field of operative invasion or diseased cavities within the tooth or in the maxillary bone. When is such sterilization needed?

(a) To sterilize and clean infected root canals; to protect dentin from infection. This may be necessary, but thorough mechanical removal of infected material is probably better.

(b) Would one attempt to treat with an antiseptic a large alveolar abscess in which the apex of the tooth projected as a foreign body? That would be too poor surgery.

(c) Would one attempt to sterilize a cavity at the bottom of which was a tooth apex, denuded of periodontal membrane and with eroded cementum? There is to my knowledge no medication nor method, germicidal, oxidizing or electrolytic, that will revivify a pus-soaked, partly-absorbed tooth apex.

(d) Would one attempt to sterilize an abscess cavity out of which the canal for drainage was out of all due surgical proportions to the size of the abscess? No.

(e) There remains then the condition where the cavity occupied by the chronic abscess or rather by the granuloma is small and of surgical proportions to its drainage canal (the pulp chambers). How can we sterilize this without doing more harm than good?

We have infected the bone, a difficult tissue to disinfect, as bacteria have invaded seemingly normal cancellous bone for some distance from the abscess cavity. We cannot inject into the bone a germicidal chemical of sufficient strength to destroy all bacteria without causing the necrosis of healthy bone. Not only that but we destroy a protective barrier nature has placed around the cavity that is superior to any we can substitute—the capsule of the granuloma, the great effort of nature to wall off the seat of inflammation. In general surgery we have learned to respect these natural barriers.

In regard to the electrical sterilization of this area of bone, I am not familiar enough with the process to answer. Ionization has a supporter in Dr. Rhein, of the University of Pennsylvania. I can only say that electric current itself never has killed bacteria. The galvanic current

used, I believe, in ionization would kill bacteria when zinc or other substance acted as an electrode, but the action would be that of a cautery only, with the resulting necrosis of bone.

Why is there any need of any greater germicide than the natural germicidal action of the tissues, if after the pulp chamber has been carefully cleaned, a filling be introduced, the apex properly insulated, and the X-ray shows an ossification of the area of lessened density, accomplishing the same recovery as when the general surgeon injects a chronic suppurating bone sinus elsewhere with bismuth, or other type of paste?

There is not to my knowledge any process that will kill bacteria in infected bone without destroying bone cells;

*First*, because some bacteria are out of reach of any agent that does not destroy the bone to come in contact with them.

*Second*, there is no agent except a chlorin-liberating, and, as in the hyperchlorous or dichloramin solutions that I have mentioned, that will kill the bacteria without damaging tissue cells.

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## CURRENT PRACTICES THAT TEND TO FAVOR INFECTION IN TOOTH STRUCTURES AND PERIAPICAL TISSUES\*

BY CHARLES P. GOSBY, D.D.S., ST. LOUIS, MO.

**T**HE SUBJECT that I am to talk on today is, to my mind, the most important problem that the dental profession has to deal with: namely, the answer to "What current practices tend to favor the establishment of a condition of infection in tooth structure and periapical tissues?"

As I am to have but fifteen minutes I will give you my view of the subject, and cover as much ground as I can in the time allotted me. The answer to the above is of great importance, and is indeed a serious one. The general trend of practices that we would naturally suspect and believe to cause these conditions are our faulty root-canal technic, ill-fitting crowns, bridges, defective interdental spaces, overhanging fillings, malocclusion, and a great many other conditions of faulty technic.

On the other hand other great factors which enter into the subject of establishing a condition of infection, are the negligence of the patient in properly following up treatments; medicinal agents left too long; the negligence of keeping arsenical preparations in the tooth too long, thereby causing a pulp to be of lowered vitality open to disease, and itself becoming a medium for infection.

Unclean methods in the filling of root canals; care in not opening restricted canals, and those canals that almost seem not to exist. The

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passing of a broach into a putrescent pulp thereby pushing infection further down towards the apex.

Pressure of a piece of temporary stopping, sealed over a treatment covering a putrefied infected pulp, thereby forcing part of the contents through the apex.

It is these little things so important that we overlook which cause these conditions. We are prone to admit that we are a little lax in some of our methods, because as yet we don't fully appreciate and realize the great importance of the elimination of these infectious areas. We are negligent in not obtaining the proper X-ray findings which we should seek, together with the clinical evidences, in order to assist us in this work in avoiding the practices which cause periapical infection.

Periapical infections usually result from the passage into the periapical space of the results of saprophytic pulp destruction, aided by the gases that arise therefrom, or by the continuation of suppurative pulp processes followed by the invasion of the soft tissues of pyogenic cocci. The general body resistance, or immunity, if you please, controls the action of the toxicity of the organism. Diathesis thus plays its important role here as in other dental diseases.

Herein lies the important point in the study of periapical infections, how much tissue liquefaction has occurred, and how long the apex has been bathed in pus.

In our daily work we must take into consideration the vitality of a root apex before any other methods or material for root-canal fillings. Therefore, our attention is called to the patho-histology of the periapical cementum in which the apex of every tooth terminates, and through which the pulp vessels pass. The most cancellated of dental structure, if once exposed to infection, is most difficult to free from it. Hartzell has shown this clearly.

If the fibres of the peridental membrane which penetrate the cementum be liquified, if the dental pulp be suppurating or gangrenous, if it be exposed to pus containing pathogenic cocci with its nutrient supply cut off, cemental necrosis or infection will follow.

Gentlemen, the current practices which tend to favor the establishment of a condition of infection in tooth structure and periapical tissue is caused by some *error* in judgment or technic on the part of the dentist, possibly from a lack of knowledge of the dangers resulting. There should be no excuse. Not knowing the law never excused its infraction. We must keep well informed in general pathology. Generally, haste in order to save time on the part of the operator who knows better is most reprehensible.

Here again I will hurriedly give several more reasons: Small shreds of necrotic pulp tissue left in the pericemental apex; the application of mummifying paste to the apical third of the pulp; from the honest operator's attempt to treat tortuous canals which cannot be filled, and

his unfortunate assumption that the tooth is a normal one, when it is not; from the sealing in of pyogenic cocci introduced by unclean methods and, as I have stated, the over-devitalization not alone of the pulp, but the pericemental apices as well.

The importance of the vitality of the pericemental apex of which there is danger of necrosis in pulp devitalization, and the risk of continued medication are conditions to be considered.

Any of these defects tend to establish an area of lowered resistance, which we may well describe as a porous culture tube which at body temperature makes an ideal culture for the growth of pathogenic organisms.

The condition which arises from the practices which I have stated that tend to establish infection is the granuloma or blind abscess, and we believe that Dr. Gilmer is correct in his statement, that "Over twenty-five per cent. of all adults have alveolar abscesses in some form." But we do not believe that it necessarily follows that even twenty-five per cent. of this large number will show systemic damage from such abscesses. The immunizing powers of the blood and tissues must be recognized in this connection. Still we must abolish the causes that are responsible for these infections.

The profession of dentistry has achieved a personality and it is making a demand which cannot be ignored. There is before us a compelling situation which we must satisfy. There must be a parting of the ways from the old local to a new and general oral pathology, so we can and must overcome these current practices which tend to favor the establishment of a condition of infection in the tooth structure and periapical tissues.

Frisco Building, St. Louis.

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### ELECTRO MEDICATION\*

BY W. H. JORDAN, D.D.S., KANSAS CITY, MO.

THE SUBJECT of electro medication has in the past been considered only from the standpoint of cataphoresis, but in view of comparatively recent discoveries, ionization is considered to be the major branch of electro-therapeutics. It was thought that cataphoresis increased osmotic pressure, that is, a drug *en masse* would enter the tissues only in the direction of flow of current, by dialysis. It is now thought that what really occurred was iontophoresis, commonly called ionization, which is the driving of particles, carrying an electric charge, into the tissues for therapeutic purposes. With this point established it is readily understood that electro medication necessarily must deal only with iontophoresis; and in this short paper I shall con-

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\*One of a symposium of papers on Some Root-Canal Problems, read before the Missouri State Dental Association, April, 1918.



fine myself to that subject, briefly discussing the principles and effects, and refraining from technicalities.

Electric conduction of a substance through the tissues of the body means transporting of electrically-charged particles from one pole of a battery towards the other.

These moving particles are ions, and there is a double movement to be considered: ions carrying a negative charge moving towards the anode, and ions carrying a positive charge towards the cathode.

This is true regardless of the direction of flow of current, and flow of current really has no importance in iontophoresis. I may explain this better by saying that, if two electrodes connected to both poles of a battery are placed in a vessel containing a salt solution, the sodium chlorid is dissociated to a certain extent, some sodium ions, which carry a positive charge, collecting at the cathode, and some chlorin ions, which carry a negative charge, collecting at the anode; this is ionization.

In carrying ions into the tissues it is necessary to know what kind of charge the desired ion carries. For example, if chlorin is the desired ion in the treating of a suppurative or inflamed condition, the normal salt and the negative electrode is placed in the canal or pus pocket, and thus the chlorin ion travels into the tissues toward the positive electrode, which is in contact with the body at a more or less distant part.

The ions will not pass through the tissues in a direct line from pole to pole but will branch out, seeking paths of least resistance. This means the ionization of a wide area and eliminates all possibilities of failure to reach all parts of the lesion under treatment, provided the current is on for a sufficient length of time.

In order to secure as much density as possible, that is, get as many ions in the part as may be, it is desirable to place both electrodes fairly close together.

In considering body resistance to the current, it is found that persons in poor general health resist more than do those in vigorous health, and calm, non-excitible people resist less than do nervous people.

Nerve, blood and muscle tissue are, in the order named, the best conductors. Dentin is not nearly so good, and enamel resists the current completely, unless there is moisture present to carry around it. These factors should be noted before iontophoresis is used in order to arrive at the proper current strength with some degree of accuracy.

The current has the effect of stimulating the motor, sensory and special nerves nearest point of contact.

Metallic electrodes in contact with the soft tissues produce acid and oxygen at the positive, and alkali and hydrogen at the negative, giving an active caustic effect at the negative, and because of this, metallic electrodes must not come in contact with the tissues, but the contact

made with a large electrode, such as a damp sponge on the soft tissues, thus getting distribution over a wider area.

In treating infected root ends this is accomplished by placing the aqueous solution in the canals together with the electrode of proper polarity, the other electrode connected to a damp sponge and placed on the face or the neck in the region of the affected tooth.

Different ions are indicated in different cases, but all substances are not dissociated by the current; and such as ethers, alcohols or chloroform cannot be used. If sterilization is desired, zinc, copper, or silver ions are indicated, but in this connection it should be remembered that anything which will destroy the protoplasm of bacteria also will destroy the protoplasm of tissue cells since the two are identical; nevertheless these ions are at times indicated as they are not so readily affected by absorption because of a certain amount of coagulation of albumin, and in infections of far reaching effects, long continued sterilization is, of course, desirable, regardless of some tissue-cell loss.

The chlorin ion, dissociated from sodium chlorid, or any metallic chlorid, has the property of softening and dissolution of fibrous or granular growths such as a granuloma, probably increases phagocytosis, has some antiseptic properties, and without doubt is indicated in the abscessed root where no systemic reactions are apparent, or very little bone destruction has occurred.

The cocain ion has been used for anesthesia but because of its toxicity its use is not considered practicable.

Just a word about the technical use of a few of the various ions. If zinc is used a zinc electrode and a 3 per cent. solution of zinc chlorid is placed in the canal or pus pocket, with the positive pole in the solution and the negative on the face. If copper is used a copper electrode and 2 per cent. solution of copper sulphate in the canal or pus pocket, using the same polarity as in the use of zinc. If sodium chlorid or iodine is used the solution is placed in the same way but the polarity is reversed, placing the negative in the canal or pus pocket, the kind of electrode used making but little, if any difference, since metallic ions from the electrode are attracted to the negative.

There are many other useful ions and it will be noted that a knowledge of the kind of charge the various ions carry is essential.

The advantages of ionic medication in dentistry are many. It is not in the least painful, if the proper current strength is applied, is extremely effective, placing at our disposal a method of reaching deep infections with disinfectants, antiseptics, and sedatives, and is very easily carried out, with a simple, readily-obtained apparatus. Marked improvement is apparent immediately and is unmistakable by both patient and operator.

In the time allotted to me it is impossible to give histories of individual cases in this paper. Will say however, that twelve to twenty-



four hours after ionizing canals from which I had grown cultures of staphylococcus, streptococcus, and many other organisms I was unable to get a culture of any pathogenic bacteria whatever, and immediately after using iontophoresis in these pus-discharging canals I am able to seal the tooth with no other medication of any kind and have no swelling, pain, or other ill effects.

On the other hand, cases in which I did not use iontophoresis, but where the pus had stopped flowing, the canals appeared perfectly dry, no soreness present, and yet I was able to grow cultures of pathogenic bacteria, proving to me that my medication applied as dressing was ineffective.

I do not wish to be understood, however, as trying to establish iontophoresis as a cure-all. In using it we must mechanically remove as much pus and debris as possible, and expect the ions to reach only such parts as cannot be reached mechanically.

In conclusion I want to say that iontophoresis is proving to be the most dependable and easiest method of treating oral infections, and is worthy of the most thorough investigation by the dental profession, especially in view of the greivous experience of all of us in treating such cases in the past.

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### SILVER-AMMONIA-FORMALIN TECHNIC FOR THE STERILIZATION OF TOOTH STRUCTURE\*

BY W. A. CHAMBERLAIN, D.D.S., ST. LOUIS, MO.

**T**O THOSE who have been interested in root-canal work and are familiar with the difficulties of sterilizing tooth structure, the ammoniacal silver-nitrate method as first advocated by Dr. Percy Howe, in September, 1917, issue of the *Dental Cosmos*, is of vital interest. It is, as far as can be learned, the most positive method yet advocated. The only objection to it is the consequent discoloration of the tooth, and this objection which stands out preeminently at first, is greatly modified by conditions and technic of application.

There can be no objection to its use in posterior teeth under crowns or in deciduous teeth. By properly protecting the crown-half of the canal with wax or some varnish it may be used without the disfiguring discoloration in bicuspid and anteriors.

Aside from the positive effectiveness of this method in sterilizing tooth structure there is another thing which recommends it. It simplifies root-canal work.

In view of the information passed on to the dental profession by our Research Institute, that formocresol as well as the long list of drugs commonly in use, also ionization, do not sterilize tooth structure, this

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\*One of a symposium of papers on Some Root-Canal Problems, read before the Missouri State Dental Association, April, 1918.

method in its present much-perfected technic is of vital interest. It should be welcomed by all; by those who are endeavoring to follow the methods of our authorities, as well as those who are not, because of the time and difficulties involved.

It seems to be effective in sealing the minute foramina and fixing those shreds of canal tissue which cannot be removed with instruments. It penetrates the canals, which cannot be opened with broaches; it will I believe be the first step in perfectly fixing the pulp and canal contents *in situ* making a perfect canal filling.

Dr. Ewing Brady, of St. Louis, whose investigation and research is very extensive, has taken up this silver nitrate method and gives what will, in my opinion, evolve into what will not only sterilize tooth structure but fix pulp and canal tissue.

Dr. Federspiel, of Milwaukee, has been working in this direction with positive beliefs in his ultimate result of fixing pulp and canal tissue. That is, impregnating the tissue and tubules with an insoluble chemical, thereby fixing them against decomposition and further infection.

#### BRIEF HISTORY OF THE USE OF $\text{AgNO}_3$ IN DENTISTRY

The use of  $\text{AgNO}_3$  in dentistry has been general for a very long time and is more or less familiar to all dentists. Some, such as Conrad, have used it very extensively in preventive work. They have made application of it, at frequent intervals, to all tooth structure with a view of checking and preventing caries.

Others have used it for desensitizing dentin and for sterilizing decayed tooth structure overlying vital pulp tissue. It has been used to a great extent in handling the deciduous teeth.

By far it has found its greatest use in the past to desensitize exposed root surfaces. Here the  $\text{AgNO}_3$  penetrates the tubules, forming a supposed insoluble silver albuminate which if allowed to turn black on exposure to sunlight, has a very lasting effect.

Dr. L. P. Bethel, in the *Ohio Dental Journal*, 1896, advocated the cataphoric application of silver nitrate for the sterilization of infected root canals, but no doubt this method did not attract much attention because of the views prevailing then regarding root-canal work.

About the year 1911, Dr. ———, of South America placed on the market a preparation consisting of asbestos fibers soaked in  $\text{AgNO}_3$  which was packed in root canals and a reducing solution used afterwards.

Dr. Howe's original methods called for two solutions.

*Solution No. 1.*—Consisted of a saturated solution of  $\text{AgNO}_3$  in water, to which was added 25 per cent. ammonia water. As the ammonia was added, a dark precipitate was formed which was soluble in an excess of ammonia so that the addition was continued until the solution was clear.

*Solution No. 2.*—Was a 25 per cent. solution of formaldehyde. At the time of the meeting of the National Dental Association in New York,



October, 1917, he advocated a modification of the original. The new technic called for the ammoniacal solution made so as to have the silver nitrate slightly in excess of the ammonia.

In order to get away from the irritation of an excess of the ammonium hydroxid, his new method was to add ammonia until a clear solution was obtained; then add the smallest possible amount of  $\text{AgNO}_3$  which would produce a precipitate.

The second solution instead of being a 25 per cent. solution of formaldehyde, he changed to a 10 per cent. in order to reduce the possibilities of the bad effects of the formaldehyde.

In his article he was of the opinion that this technic alone would take care of conditions of putrescence and sepsis in the root canals, also penetrate canals inaccessible to the broach as well as fix the shreds of the pulp tissue which could not be removed.

The theory of all this is that the ammoniacal  $\text{AgNO}_3$  has considerable affinity for albumin, consequently penetrates pulp tissue, dentinal tubules and canals.

This being followed by  $\text{CH}_2\text{O}$ , a precipitate of free silver is thrown down. Any excess of  $\text{CH}_2\text{O}$  above what is required to reduce the  $\text{AgNO}_3$  can be regarded in the light of our authorities on root-canal work.

This ammoniacal  $\text{AgNO}_3$  method as can be seen, has a great advantage in root-canal work over straight  $\text{AgNO}_3$  which if used would coagulate the albumin and limit decidedly the penetrating effects of the drug.

In my opinion, the use of ammonium-silver-nitrate is indicated in all canals immediately preceding root-canal fillings. In putrescent canals, other drugs should be used first, preferably Dakin's solution, to overcome the possibilities of infectious material from being forced through the apex. Dakin's solution acting by virtue of chlorin gas penetrates the putrescent mass more readily and suppresses the facultative anærobies.

Sodium potassium may be used but care should be used to wash out products formed and this followed by an acid, phosphoric acid being suggested because it is always at hand.

All canals should be enlarged, to facilitate filling. NaK helps in this. Even in canals from which vital nerves have been removed, the use of  $\text{H}_2\text{SO}_4$ , 10 per cent. just before the  $\text{AgNO}_3$  is applied leads to a greater deposit of silver.

After the preceding technic has been followed, dry the canals and apply ammoniated silver nitrate on a broach carrying a wisp of cotton, pumping the solution into place. Allow it to remain three minutes at least and longer if desired. Dry again and apply the reducing solution.

The recognized fact of  $\text{AgNO}_3$  being a germicide by coagulating the proteins of the cell recommends it for use in this particular kind of work. However, because of the self-limiting property of  $\text{AgNO}_3$ , ammoniated  $\text{AgNO}_3$  will penetrate these cell contents without coagulating the albu-

min. This also furthers the penetration of the drug in Tomes fibres. When the reducing solution is used the  $\text{AgNO}_3$  is thrown down within the cells and thus the organic matrix of the dentin is impregnated with silver and fixed, preventing the field from becoming fertile for proliferation of micro-organisms.

Metropolitan Building.

## A CONSIDERATION OF MODERN METHODS AND MATERIALS FOR FILLING ROOT CANALS\*

BY EWING P. BRADY, D.D.S., ST. LOUIS, MO.

**I**N THE RESTORATION of teeth in which the pulp must be extirpated, we should bear in mind at all times the fact "that there are two extremities of the tooth to be filled." The filling of the apical portion should receive the same painstaking efforts from us because of the fact that we as dentists are alone the judge of our work, while on the other hand the patient at least has some conception as to the character of the filling, making the restoration of visible portions of the tooth. It reflects upon the dignity of our profession to use every means at hand to make this part of our operations as near perfect as possible.

Before taking up the subject of modern materials used in filling root canals, I want to say that I find some very peculiar methods used in filling root canals, judging from the findings which I have made in dissecting extracted teeth which have found their way into my hands. Gentlemen, the day of cotton root-canal filling is not past by any means; neither is the epoch in which amalgam is simply pushed into the pulp chamber with the remnants of the pulp in the root canals. Another unique method is the use of germicidal black copper cement, pushed into the pulp chamber, expecting the remains of the pulp to be mummified. The Lord only knows if the pulps were vital before this treatment was used! Judging from the amount of coagulated blood in the pulps, I should say that there was every evidence that the pulp tissue was partially vital—possibly; and I will say with a certainty these methods have to answer for the fact that the teeth were prematurely lost.

### FILLING ROOT CANALS

The question of filling root canals is a very difficult one and as we know requires an immense amount of energy on the part of the dentist.

The filling of a root canal, and also when it is perfectly filled, are subject to debate. The X-ray shows us all degrees approaching to what I hesitate to call perfection.

I am going to make a rather radical statement, and I know all will not agree with me, but my experience has proven that what I say is true:

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\*One of a symposium of papers on Some Root-Canal Problems, read before the Missouri State Dental Association, April, 1918.



*A canal which shows the root filling slightly protruding through the apical foramen by the X-ray is the only canal in which the naked eye can positively determine that the filling material actually has reached its destination.*

A filling material may fall short a very small fraction of an inch, say one micron, or even a greater distance, say a twenty-fifth inch, and still the eye could not perceive this deficiency by the X-ray; and yet we all criticise X-ray findings in which this distance is very great. In regard to the micro-organisms which may infect this area, they do not require more space than is mentioned in the first figures to set up an active infection.

Another question which must be taken into consideration is: Do our root-canal filling materials hermetically seal the apical foramina, even if the root-canal filling should penetrate through?

This must be looked at from two points of view:

(a) Dentin which may contain organisms that at a future time may again find opportunity to escape, and pass through the apical foramen and cause trouble.

(b) Invading organisms from the blood may find lodgment in the tooth, and start up infections in the organic matrix of the dentin. As you know this material is composed of protoplasmic processes from the odontoblastic layer of the pulp or membrane of Eboris, which would serve as a fertile field for the proliferation of the organisms. The point to keep under consideration is the fact that the body-fluids carrying infection may find their way between the root-canal filling and the sides of the root canal, if this apical position is not hermetically filled. I will speak of this condition later.

#### MODERN METHODS

Under this head I would consider the reaming out of all canals. I wish to emphasize the point of reaming out *all*. I find there are very few canals especially in the molar region which do not require such treatment. I use a style A, X-fine Kerr pulp-canal file, and then follow with the style A No. 3 file. If it is not possible to enlarge with these instruments, it is advisable to use kalium natrium alloy; and comparing this reagent with 40 percent.  $\text{H}_2\text{SO}_4$ , it is my experience that it acts much more rapidly. Dr. Chamberlain has emphasized the use of these instruments, and it is not necessary for me to deal with it any further.

After the canals have been opened up, the best procedure is to use diagnostic wires and have the case X-rayed. I wish at this point to quote a case that came under my observation a few weeks ago. Lower molar; opened up canals as described, and found that the root-canal file penetrated very deeply; surmised the tooth had a very long root. Patient gave no pain-response when the broach was passed deeply into canal. Upon X-raying found that the broach was protruding one-

eighth-inch through the apical foramen, due to the condition at the apical space. I determined to have the tooth extracted and found the picture as just described.

When the canals are ready to fill, that is if the pulp has been removed due to a simple pulpitis and no putrescent condition present, my next procedure is to use the silver nitrate treatment. If the tooth has been infected, that is if a putrescent condition is present, I recommend treating the infection first and when you are ready to fill canals then use the silver treatment.

Dr. Chamberlain has taken up the subject of silver and formalin treatment of canals, and as this subject is a "Method Used In Root Canals," I wish to say just a few words along this line. The work I have been doing in this field I will demonstrate this afternoon with specimens, so that a word on this subject now will give everyone an understanding of what I am attempting to show in my clinic.

I want first to call your attention to two points in the use of silver in root canals.

*First*, the solution of ammoniacal silver nitrate should be prepared properly. Last week I made the statement at a dental meeting that this was a simple matter. Upon meeting several practitioners who had attempted to prepare the solution, I find that what was simple for me was not as simple for them, as they had not given the time to this work I had.

If you take the directions to the druggist he invariably fails to get the results that he should obtain. The cause of the error is in the quantity of ammonia which is present in excess. If there is an excess of ammonia, the solution will set up a pericementitis. Another fact which should be borne in mind is that in preparing the solutions the object should be not to dilute the silver solution so much that the silver content is too low.

*Second*, precaution: Do not use this solution in a putrescent root canal for the reason that the infection will be forced through the apex; and then when you reduce the silver, the silver will clog up the canal and thus in a measure seal up the periapical space from the root canal; and if the tooth be sealed up with cement or stopping, an abscess will result. The point arises, is not this solution antiseptic? Yes, it is; but it does not reach the zone of infection.

In the modern methods of treating root canals the object is not only to fill the root canals to the apex, but also to act upon the organic tissue within the dentin, and change it to such an extent that the organism which may be present and also any organisms which may reach this site at a future time will not find a fertile field to proliferate and set up an active infection.

Dr. Percy Howe has introduced the ammoniacal silver-nitrate method, and working along this same line I have been using various other methods



in order to get away from the effect which might result from any excess of formalin which he uses as a reducing solution. In this regard I have used ammoniacal silver nitrate, and thrown down the silver with zinc and copper wires; but I find that this method is not satisfactory, because the silver is liberated from the wire and is thus attracted from the dentin. The same silver solution and a dilute solution of nitric acid was next used. In this case the silver was freed from its combination with ammonia and ammonium nitrate was formed. The silver which had penetrated deeply into the tissues was then liberated to cause a precipitation of the proteins of the cells. The penetration was facilitated by the use of ammonia, without which only a slight action would have resulted, as Prinz says, about one-fiftieth of an inch.

I tried also a solution of gold, figuring that it would not cause such a dark discoloration; and the gold could be precipitated from solution and would not be so liable to any secondary action from the body secretions. I have this solution in a good way to success, and I expect within a few months to be able to make some definite statements upon this subject.

#### ROOT-CANAL FILLING MATERIALS

Without a question of a doubt this branch of dentistry must be improved upon, and the subject as it presents itself at the present time is as follows:

*First*, we do not possess a permanent material which will absolutely seal the apical foraminæ and prevent the tissue fluids from entering the root canal from the periapical tissue; and also the organisms in the dentin may escape and find their way to the periapical tissue by passing down beside the root filling.

Our difficulties are made greater by the anatomical make-up of the root canal at the apical portion. The X-ray may show our root-canal filling material completely filling the canal, but this is a very poor guide, for the reason that invariably the pulp does not enter the tooth by a single foramen but through multiple foraminæ.

I am not discrediting the X-ray because I feel that it is one of the greatest adjuncts that the dental profession has received in the last years.

#### GUTTA PERCHA AND EUCALYPTOL COMBINATIONS

"Eucalyptol is oily in nature, and lubricates the canal and assists in the ready introduction of the gutta-percha cone, and also facilitates the removal of the filling material at a future time if this is desired." From my experiments I find the above recommendation one of the principal drawbacks to the use of this material in root canals, for the very reason that the eucalyptol prevents a firm union of the gutta percha with the surfaces of the canals; and further this oil will be removed in time and leave a leaky joint between the canal and the root filling. To

prove my statement I have specimens which show that fluids can creep up between this material into the root canal for a considerable distance.

#### CHLOROFORM SOLUTION OF GUTTA PERCHA WITH GUTTA-PERCHA CONE

This material contracts upon the removal of the chloroform and this also will leave a leaky joint. I find that this shrinkage is not as harmful as the results produced in the eucalyptol method; however, there is some danger in forcing some of the chloro percha through the apical foramen in causing irritation.

#### CALLAHAN'S METHOD

This method to me has several drawbacks as a filling material. It has advantages over the other two methods as to its sealing properties.

The drawbacks may be classed as follows:

(a) The difficulty met with in introducing the gutta-percha cone and in the pumping motion to form chloro percha with the rosin solution. The cone bends upon itself and we do not get the deep penetration which is necessary..

(b) If delays are encountered in introducing the cone, the chloroform evaporates and results in a sticky mass in which it is impossible to pump the cone. More chloroform solution may be introduced, but there always are some surfaces which do not come in contact with this further addition of chloroform.

(c) The canals should be absolutely dry. Otherwise I find that the rosin is found to form a precipitate which is porous.

(d) If excess of the solution be used to prevent the stickiness of the canals some of the chloroform is forced through the apex, resulting in the production of pericementitis.

#### FEDERSPEIL'S METHOD

In this method a saturated solution of gum copal in acetone is used; the solution then filtered through cotton, and is ready for use. The acetone is compatible with water and this overcomes the objection I raised to Callahan's method, as the canals may contain some moisture and still be taken care of by this method. The copal solution is pumped into the canal and the silver wire is forced into the canals. This wire acts as a core and carries the copal solution with it; it also serves as a radiopaque material in taking an X-ray to determine if the canals have been filled.

1467 Union Boulevard.

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WHAT CONSTITUTIONAL AND CLINICAL EVIDENCES WILL  
AID IN DETERMINING WHETHER A TOOTH SHALL  
BE EXTRACTED, TREATED, OR LEFT  
UNDISTURBED?\*

BY E. G. SCHMITT, D.D.S., SPRINGFIELD, MO.

**T**HIS IS A VERY important subject and must be considered from all angles. To begin at the proper point, we will eliminate the consideration of all teeth having small cavities and which require no devitalization.

*Second*, we will consider all teeth in which we find the cavity extending near the pulp, in which there has been but slight pulpitis or pericementitis, as teeth to be treated, nerve extirpated, and root properly filled, regardless of the patient's constitutional condition.

*Third*, all teeth in which caries has progressed to the point in which the pulp has been exposed to the oral flora, must be considered as infected. At the same time, the pulp may possess a normal degree of resistance to the infection, so as to overcome the same for a period of time. These teeth after proper antiseptic or prophylactic treatment, should be devitalized and the root properly filled.

*Fourth*, teeth in which we find putrescent pulps, even though no suppuration be present, always should be regarded with suspicion, but not be condemned too quickly. Bear in mind under this class, I do not mean teeth which show the formation of unhealthy granulation at the apex. I mean simple putrescent pulps with no other complications. At this stage of the game, we must begin to look for constitutional conditions, to assist us in a decision in regard to the prognosis. A simple putrescent pulp may harbor certain germs, which may cause disturbances in the patient's general condition, especially arthritis, in which we usually find the streptococci viridans playing an important part.

Now the fact that a patient has arthritis and happens to have a tooth or teeth with simple putrescent canals, should not lead us to extraction immediately. It is essential that we eliminate the possibility of focal infection elsewhere. The patient may have chronic gonorrhea; he may have infected tonsils; he may have sinusitis; anyone of which might be the primary cause of the systemic condition. After eliminating all possibility of focal infection elsewhere in the body, and having a patient with arthritis (especially acute), and a culture showing the streptococci viridans in luxurious growth, personally I would not hesitate one moment to condemn that tooth or teeth to the forceps. A simple putrescent pulp, not accompanied by apical complications,

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\*One of a symposium of papers on Some Root-Canal Problems, read before the Missouri State Dental Association, April, 1918.

and the patient otherwise in normal condition, should be treated. Never permit a tooth in which the nerve is dead, and in which the roots have not been properly filled, to remain undisturbed, because sooner or later that condition will be throwing poisons into the system, and cause not only local, but in all probability systemic disturbances. There are other systemic conditions to be considered, but we will discuss them under another head.

*Fifth*, we now arrive at the point where we find apical infections, peridental infections, pyorrheal infections, syphilitic infections, etc. We will consider teeth having acute apical or peridental abscesses, with or without a sinus, with very little destruction of hard and soft tissue, and no systemic disturbances, as teeth to be treated. One of the clinical manifestations in many cases of acute abscess formation is fever, and the dentist who will use his thermometer often, will detect pus formation in its insipidity. In our office, the thermometer is indispensable. The forceps should be applied to all molars, when the alveolar spicula between the bifurcation of the roots has been destroyed by pus. This of course is only discovered by the use of the radiograph.

When we consider teeth having chronic infection, be they apical or peridental, we always must take note of the patient's normal resistance and general condition. Many of the lesser ills of the body in the form of subjective soreness of the tissues, nerves, muscles and joints, are the result of slight focal infections in the mouth or throat, or some other part of the body, especially so in people possessing a low degree of resistance.

Chronic apical abscesses in patients in otherwise normal condition and having a high degree of resistance, should be treated, providing the tissue destruction is not too great. If the infection has denuded the apical portion of the root, amputation of the same may be resorted to and in that way the tooth be saved.

We must bear in mind the bacteriological findings in acute and chronic apical abscesses. The following bacteria usually are found: Streptococci, chiefly streptococcus viridans and hemolyticus, staphylococcus aureus and albus, pneumococcus fusiform bacilli, amœba and other less important germs. I mention these because I believe the clinical examination should include a bacteriological study, before the course of procedure shall be decided upon.

Let us consider a patient suffering with either parenchymatous or chronic interstitial nephritis, and after eliminating all possibility of focal infections elsewhere, we find a number of chronic alveolar abscesses, or a case of pyorrhea. We know that the systemic condition is sometimes the result of bacterial toxins. In the case above mentioned, we may safely conclude that the absorption of toxins and their consequent elimination probably is the cause, or at least is aggravating the condition. In a case like this, the immediate eradication of the aggravating



cause (the focal infection) is essential, the teeth should be removed, sockets curetted and properly treated.

When our patient has endo-, myo-, or peri-carditis, and after eliminating all other focal infections, we must take the general condition into consideration, and remember that the cause usually is an irritant circulating in the blood, and in some instances an organism, such as the staphylococcus pyogenes, or the diplococcus pneumoniae, all of which also might be the primary cause of the abscess or pyorrhea. We should not hesitate to extract the infected teeth in these cases.

Chronic apical abscesses might be the cause of infective arteritis, because the germs from the same may find their way into the walls of the blood vessel via the blood stream. Chronic infected foci should be eliminated in all cases of infective arteritis, regardless of location; therefore, we should not hesitate to use the forceps when we find the patient has chronic apical, peridental or pyorrheal abscesses. The sooner the foci are cleared up the better.

When the clinical examination shows the patient has suppurative inflammation of the lymphatic glands, especially of the head and neck, and after elimination of all other foci except chronic abscesses of any type, those teeth should be extracted.

When a diagnosis indicates an acute or chronic peptic, gastric or duodenal ulcer, and the patient has a chronic abscess or a pyorrhea of long standing, we must not overlook the possibility of further aggravating the ulcer, and every effort must be made to remove the foci. The radiograph must be depended upon as to whether the tissue destruction is very great. If there is a possibility of eradicating the foci by treatment, it should be tried. If local conditions are bad, the teeth should be removed.

Many times the constitutional condition presents an acute, or we might say, a spontaneous osteomyelitis in connection with chronic abscesses and pyorrhea. Often no other foci are found. In young persons it is sometimes advisable to treat the abscesses. In case of advanced pyorrhea in grown persons, it is advantageous to extract.

Thyroid enlargement, usually of a chronic type, associated with evidences of thyroid intoxication in many young women patients must be taken into consideration. After eliminating rheumatic fever, tonsillitis and sinusitis and finding the alveolar abscess or abscesses are of the chronic type, and a possibility of a complete cure is doubtful owing to the tissue destruction, etc., we always should condemn that tooth or teeth.

Even though the amœba may not be the primary cause of pyorrhea, it is present in many instances, especially so in chronic cases. Many times we find pyorrhea patients suffering with chronic dysentery, of the amœbic type. Here as in all focal infections, we must study the bac-

teriological findings, note the degree of tissue destruction and the patient's power of resistance. In most cases it is advisable to extract.

It is sometimes advisable to extract teeth with chronic abscesses, when the constitutional conditions show an abnormally high blood pressure, with no other apparent cause. In a number of such cases under our observation the blood pressure was reduced after extraction.

Although rare, we must look for tubercular manifestations in cases of infected jaw conditions. Teeth may loosen, as though from pyorrhea. Again we must resort to bacteriological examination to scientifically arrive at a decision. If tuberculosis is present, extraction and radical curettment is indicated.

Besides the ordinary pus infections, we find other conditions which attack the bone and sometimes simulate pyorrheal and apical abscesses. A snapshot diagnosis is sometimes the cause of the loss of serviceable teeth in specific infections. Syphilis may affect the bone, surrounding the tooth or teeth, as a thickening of the periosteum, which occurs after the secondary lesions have subsided. In tertiary lesions the bone substance around the tooth or teeth may be replaced or killed by gumma, which find their way into the soft tissue. These may break down and discharge pus very similar to an abscess with a sinus. If there is the least suspicion a Wasserman should be made; should the reaction be positive, the tooth or teeth involved should be left undisturbed, and systemic treatment resorted to.

We often find the formation of dental cysts over or rather surrounding the apex of devitalized teeth. In these cases the removal of the cyst and amputation of the apical end is indicated.

Antral infection is of importance in deciding whether abscessed teeth should be treated or extracted. One should remember the clinical manifestation of maxillary sinusitis. The objective symptoms are both intra-nasal and extra-nasal. The intra-nasal are the presence of pus, or a plug of mucus and pus, or an irregular discharge of pus under the center of the middle turbinated bone. We sometimes find a bulging or rupture into the orbit with exophthalmos, or there may be a thinning or bulging of the exterior antral wall. The X-ray or transilluminating lamp is of value. If the antral infection is due to an alveolar abscess draining into the sinus, by all means extract the offending tooth.

This subject covers a vast area, but owing to the time allotted, I have attempted from my personal experience, to give you some of the constitutional and clinical evidences which will aid in determining whether a tooth shall be extracted, treated, or left undisturbed. •

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## THE USE OF APPLIANCES IN THE TREATMENT OF INJURIES OF SOFT PARTS OF THE FACE AND MOUTH

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**W**AR INJURIES of the face and jaws involve fracture, comminution or destruction of the bony structures, and laceration or destruction of the associated soft tissues. In the treatment of this condition, the surgeon's aim is to restore all tissues as nearly as possible to the normal state; that is, to repair the injured bone without deformity or loss of function, and to close the wounds with the least possible disfigurement, scar formation, or adhesion. If no appreciable loss of soft or bony tissues has occurred these objects are easier of attainment, but if on the other hand, a distinct loss has taken place then it becomes necessary to resort to plastic operations, or to artificial devices which serve as functional or cosmetic substitutes.

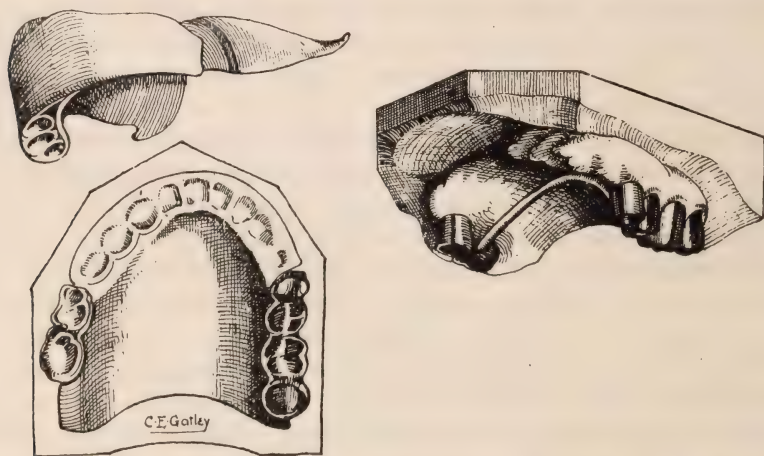


Fig. 1.—The model shows destruction of the maxilla anteriorly, and a fracture of the right molar region. The fracture is immobilized by a band and wire splint cemented to the teeth. The vulcanite base plate is retained by attachment to the wire of the splint, and has sufficient fullness and contour to prevent undesirable adhesions and contraction of the soft tissues. It also serves later as a supporting appliance in connection with plastic operations

In treating the displacement of the bone which results from fracture, maxillary splints are used to hold the remaining parts of the jaws in that position which represents the former occlusion of the teeth. In a strict sense the splint deals only with the repair of bone. But in nearly all cases of gun-shot injury to the jaws the soft tissues are likewise involved and when needed, certain appliances may be designed to aid their proper

reformation. Such appliances in construction may be an integral part of the splint, an adjunct to it, or entirely separate from it.

From experience it is obvious that the care of the soft parts and the consideration of bony structure are inseparable, and it is of great im-

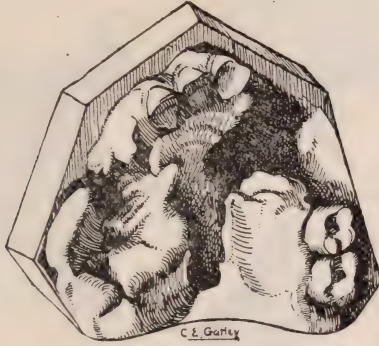


Fig. 2.—A cast illustrating laceration, comminution, and partial destruction of the maxilla.

portance that due regard should be given to the construction of mechanical devices for the repair of both. As case of gun shot wound of the face



Fig. 3.

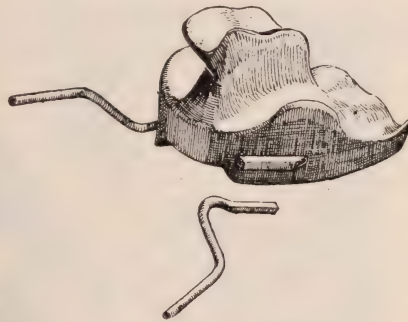


Fig. 4.

Fig. 3.—A vulcanite base plate which covers the remaining teeth and entire plate. It immobilizes the loose fragments, and by the frequent addition of modelling composition or gutta percha to its superior surface, it presses and reforms the palatal vault.

Fig. 4.—An appliance used where there is extensive destruction of the superior maxilla. In this case the entire palate in front of the third molar and septum of nose are destroyed. The restoration is made with sufficient bulk and contour to prevent the face tissues from collapsing and also has extension in the middle to support the bridge of the nose. It is held in position by means of external appliances as seen in Fig. 3.

and jaw progresses from day to day slight or radical changes are frequently indicated in the splints or appliances, and often surgical assistance is obligatory or of a nature which tends to hasten the patient's



convalescence, or to forestall a certain deformity. In these events the use of appliances and surgical procedure are inseparable; for perhaps the proposed operation would fail without the help of a suitable mechanical device, or perhaps the device would serve no purpose without sur-

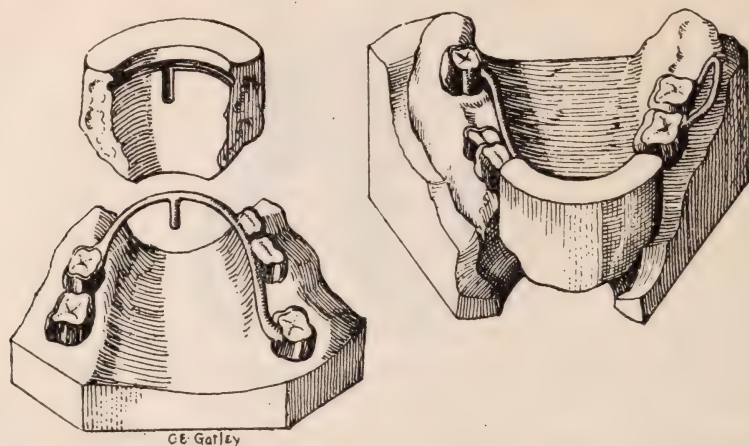


Fig. 5.—A band and wire splint with a perpendicular wire, or "T". A vulcanite piece with grooves corresponding to the wire is made with sufficient bulk to prevent tissue contraction; and at a later stage acts as a support in connection with plastic operations.

gical interference. Better results are to be attainable with the intelligent combination of appliances and surgery. At the beginning of the war there was a tendency on the part of surgeons and dentists each to

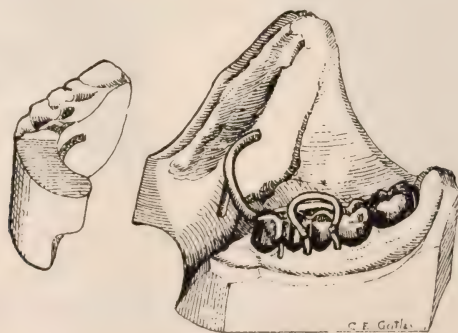


Fig. 6.—A splint used when one side of the mandible is edentulous. The vulcanite piece fits the alveolar ridges accurately, and is retained in place by the wire extension and "T", the occlusion of the upper teeth, and the tissues of the cheek.

lean too strongly on his own resources in treating fractures and correcting deformities. The progress which has been made since that time has been consistent with the association and amalgamation of mechanical with surgical correction.

## THE APPLICATION OF MECHANICAL FORCES TO THE SOFT TISSUES

Mechanical devices for soft tissues should be considered primarily for directing the course of recovery, and not merely for correcting a



Fig. 7.—An intermaxillary vulcanite splint made in sections to facilitate introduction and adjustment in the mouth.

deformity. Their greatest usefulness by far lies in anticipating certain conditions, and always in preventing the occurrence of disfigurement or distortion.

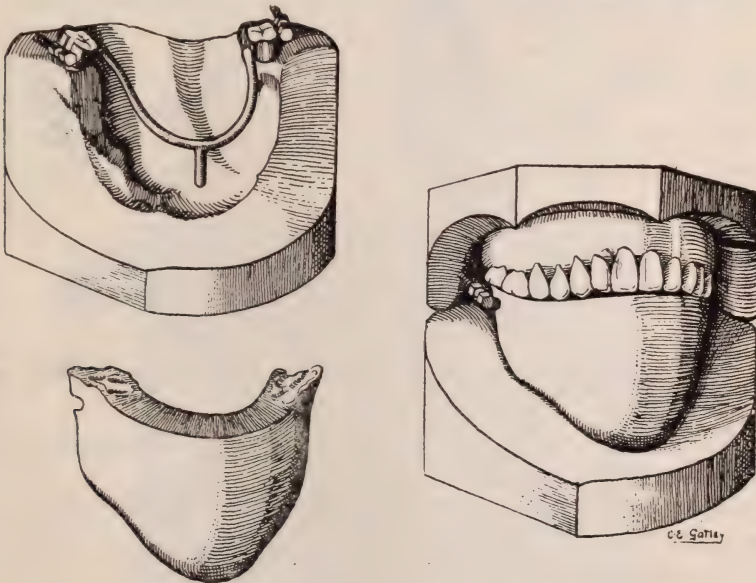


Fig. 8.—Model showing extensive loss of the mandible, with one molar tooth remaining on each posterior segment. A band and wire splint is used to control the position and function of the rami. In this case the bands, instead of being cemented to the teeth, are tightened with screws to give greater security. The removable vulcanite appliance is of a proper size and shape to maintain the contour of the remaining soft tissues of the face.

*First*, appliances may be employed to support the soft tissues immediately, or soon after injury. At this period the parts are soft and



mobile, and though inflamed, gentle pressure may often be applied to direct the course of healing and to avoid undue contraction.

*Second*, appliances may keep the intra-oral tissues in such a state that ultimately the contours, the shape of remaining alveolar ridges, and the muscular attachments are more natural, and therefore are more receptive to dentures or oral restorations.

*Third*, appliances may be indispensable to a successful plastic operation. The shape and expression of the human face depends upon the structures supporting the soft tissues, and in operations for cosmetic

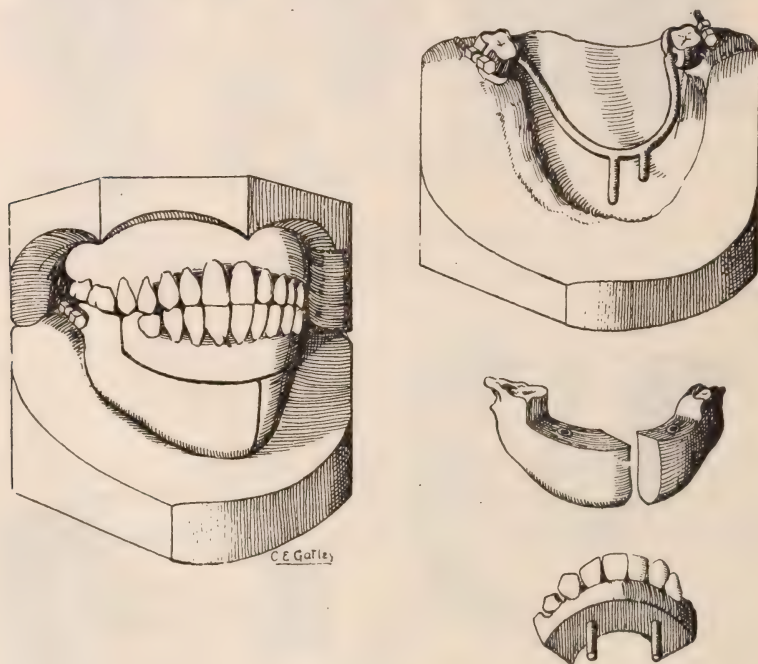


Fig. 9.—A splint and appliance which serves the same ends as does that described in Fig. 8, but made in sections to permit easier adjustment.

or functional effect the appliance from necessity often becomes the substitute for the substructure.

Appliances for whatever purpose should have the following essentials in construction:

- (a) Be as simple as possible.
- (b) Fit the mouth, or other tissues, with accuracy.
- (c) Be retained in position without undue difficulty, or inconvenience.
- (d) Be easy of adjustment either by the surgeon or by the patient.
- (e) Be easy to clean.

#### THE CONSTRUCTED APPLIANCE IN USE. INTRA-ORAL

For purposes of description it is simpler to divide the subject into two chief groups, intra-oral and extra-oral appliances. Intra-oral de-

vices in turn fall into two divisions which more or less merge into each other: *first*, those used for cases of comminuted fracture, and *second*, those used for cases with an appreciable loss of soft or hard tissue. In this first instance the appliance directs the repair of tissue, while in the



Fig. 10.—A case of extensive injury to the sublingual region accompanied by loss of the mandible anterior to the second molars. The appliance used to support the chin and to raise the lower lip is shown in Figs. 13 and 15.

second it directs, but at the same time acts as a temporary prosthetic substitute for the bone tissue.

In cases of injury to either jaw varying amounts of comminution, loss of alveolar process, teeth and bone, and laceration of the muscles



Fig. 11.—A case of extensive injury which involved the cheeks, submaxillary region and neck, with loss of the mandible from angle to angle. The soft tissues were controlled by an appliance similar to the one shown in Fig. 16. The sublingual wound, which communicated with the mouth, was allowed to heal until only a small perforation remained. The latter was then closed by operation. (See Fig. 17.)



and mucous membranes exist. The oral surgeon constructs a splint to reduce the fracture, to maintain the bone in a state of immobilization and to gain ultimate union and functional activity along the lines of efficient occlusion. When the wound is of appreciable size the soft tissues cannot be disregarded and allowed to heal in a contracted shape, and it must be remembered that the mucous membrane may form adhesions detrimental to the adaptation of subsequent dentures or restorations. In orthopædic surgery the operative technic is modified as far as circumstances permit to facilitate the reception of artificial limbs. The same principles hold true in the treatment of injuries of the jaws; the remaining parts of the maxillæ and the oral tissues should be prepared to receive artificial devices.

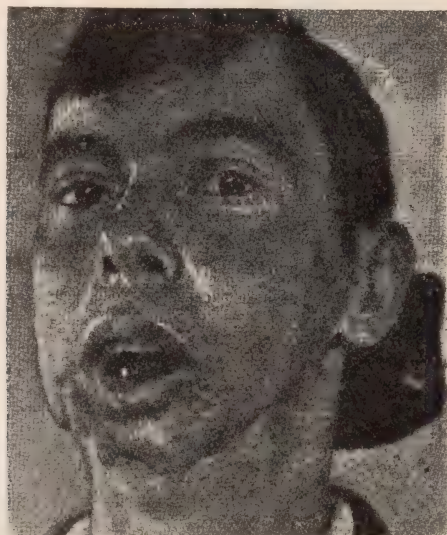


Fig. 12.—A case injury to the soft tissues and mandible similar to that shown in Figs. 10 and 11. The wound was sutured at an advanced station without intra-oral support, with consequent pronounced deformity of the lower lip, chin and neck.

Injuries of the soft tissues complicated by fracture of the upper jaw may be divided as follows:

*First*, comminution or destruction of the alveolar process, which may or may not be accompanied by a fracture of the body of the maxilla.

*Second*, injuries mainly involving comminution and laceration of the palate.

*Third*, destruction of the whole or a part of the maxilla.

*Fourth*, the foregoing conditions, associated with destruction of the bones of the nasal fossæ.

In this group, the surgical treatment consists of removing pieces of bone and teeth, smoothing sharp edges and, if possible, of suturing firmly the mucous membrane of the injured area. A case of this type

obviously needs no splint to support the bony tissue, but adhesions of the soft tissues which obliterate the sulci, may be avoided by the early insertion of a vulcanite plate splint of the proper fulness and contour.



Fig. 13.—The same case as shown in Fig. 10, with the splint and appliance illustrated in Fig. 15, adjusted to support the lower lip and chin. The lower border of the vulcanite piece is visible in the anterior portion of the wound. The result of closure of the wound by operation is shown in Fig. 14.

If a partial fracture of the maxilla has taken place, in some cases such a plate splint serves to immobilize it in correct position (c. f. a jacquet vulcanite retainer in orthodontia), or in other instances a metal band

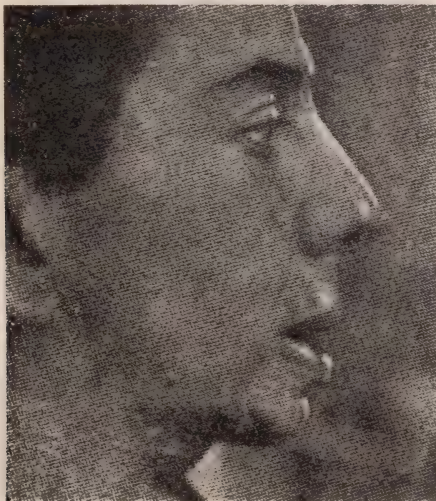


Fig. 14.—Photograph of case shown in Figs. 10 and 13, after the plastic operation for the closure of sublingual perforation.



and wire splint is used. (*Fig. 1.*) In the latter event, the base plate is adjusted over the splint.

In injuries of this type, the restoration of the palatal vault is essential in order to avoid impairment of function. (*Fig. 2.*) A vulcanite base plate is made to compress the lacerated and disarranged tissues at an early stage and acts as a support to the hard and soft palate. As the palate responds to pressure and gains a more natural contour, material



Fig. 15.—A band and wire splint maintains the existing portions of the mandible in anatomical position, while the vulcanite attachment, being curved at its tip, acts as a seat to support the tissues of the lower lip and chin, in cases of the type illustrated in Figs. 10 and 13.

(vulcanite, gutta-percha, etc.) is added frequently to the plate, and at successive stages an entirely new plate is made when needed. (*Fig. 3.*)

There may occur a considerable loss of the maxilla. When the surgical cleaning of the area has been done, a vulcanite base plate is constructed to give the necessary bulk, and is kept in place by clasps on any remaining teeth or by occlusal support from the lower teeth. If support for the plate is unobtainable intra-orally, it may be gained extra-

orally as *Figs. 4 and 3*. Complete loss of the maxilla or of the maxilla with nasal tissues, involves the use of many appliances, varying widely to meet the needs of the individual case.

In the lower jaw it is seldom that destruction of the alveolar process occurs without complete fracture of the body, and so it is practically

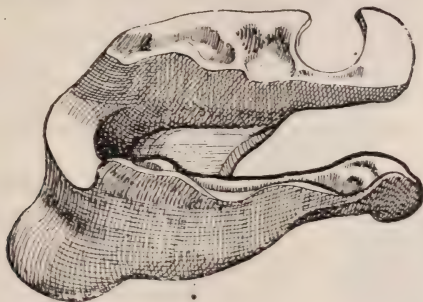


Fig. 16.—This vulcanite appliance serves the same purpose as that shown in Fig. 15, but is designed for use in edentulous cases, as illustrated by Fig. 11. It is kept in position chiefly by the occlusion with the upper teeth, though in some instances lower teeth may remain which permit the use of clasps. If additional support for the appliance is needed small hooks may be inserted in the vulcanite for the attachment of elastic bands to opposing hooks on the upper teeth.



Fig. 17.—A later picture of the patient shown in Fig. 11. The perforation under chin was closed by flaps from side of neck. Owing to great loss of bone the soft tissues of the chin is supported by an intra-oral prosthetic appliance.

always the case that an appliance is used to control the soft parts in addition to the splint for the hard tissues.

If there are serviceable teeth posterior to the area of comminution on both sides, a band and wire splint is constructed (to immobilize the parts). (*Fig. 5*.) The wire, or arch (No. 12, A. G.) passes over the



injured area at the linguo-gingival position and at about its middle a short vertical rod is soldered at right angles to its lower aspect. The arch and (T) form the retention for a removable vulcanite appliance which replaces in bulk the destroyed tissue, and makes it impossible for the injured soft parts to form undesirable adhesions upon the regenerating bone, and for the cheek or lips to contract and collapse at that region. There are many devices used to carry vulcanite attachments on metal splints, but the arch and "T" seem to answer all requirements of simplicity, stability and ease of introduction into the mouth. The inner aspect of the vulcanite has a groove corresponding

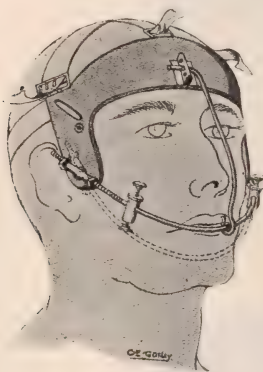


Fig. 18.



Fig. 19

Fig. 18.—Gutta-percha is fitted to the forehead and temporal regions and is retained by a headgear of webbing. The wire arch which passes in front of the face, rotates in the holes in front of the ears to allow a wider range of adjustment. In this illustration, the ends of the arch are threaded and pass through small metal tubes (which have short spurs soldered at right angles to permit introduction to the holes in the gutta-percha) with nuts to control the length. In other instances the ends of the facial arch may be bent at right angles to allow direct insertion in the holes as in Fig. 28. The median wire controls the height of the arch. Any part of the appliance serves as an anchorage of intra-oral splints, nasal, and facial supports.

Fig. 19.—Accuracy in the position of the webbing straps is essential. The horizontal strap passes just over the ears and below the occipital protuberance; and the vertical straps join at the crown. The head is shaved in the occipital region in order that the webbing may be stuck to the skin by a large piece of adhesive plaster.

to the position of the wire, and the appliance is easily renewed or enlarged by the addition of vulcanite, modelling composition or gutta-percha.

If there are teeth available on one side only, posterior to the injured area then probably upper and lower swaged or cap splints would be used, with hooks or other suitable attachments for inter-maxillary ligation to effect immobilization. In the laceration of the soft tissue or the destruction of alveolar process and bone is extensive, an arch wire and "T" is extended over the injured area in a similar manner. The vulcanite appliance (*Fig. 6*) is used to control the soft tissues, and at the same time, by having occlusal contact with the upper jaw, serves to



Fig. 20.—Extensive wound of the chin leaving the lower lip intact, accompanied by severe comminution of the mandible. The lip was held in a normal position until the wound was completely healed, and then the scars were excised and replaced by skin flaps from the side of the chin. (See Fig. 24.)

prevent this edentulous side from displacing upward as would be the case if it were not interfered with.

If no teeth exist after the injury or if none are available for the anchorage of splints, the sectional inter-maxillary splint (*Fig. 7*) is used,

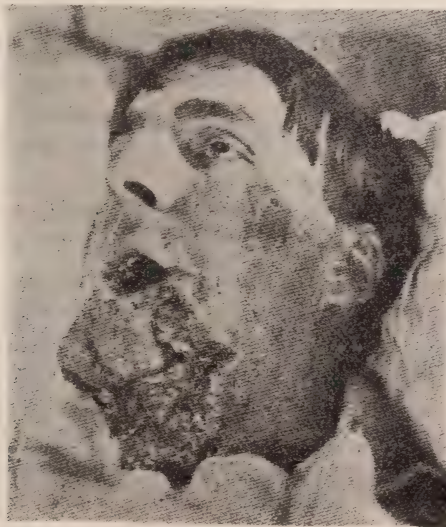


Fig. 21.—Injury to the soft and bony tissues similar to, but more extensive than that shown in Fig. 20. The tissues were controlled by the combined use of the appliance illustrated in Figs. 15 and 22. Closure of the wound with the lower lip in a natural position resulted. (See Fig. 25.)



being constructed to preserve the alveolar ridges and to prevent muscular encroachment. (By being sectional in construction, the splint is easier to introduce and adjust in the mouth.)

Those injuries which involve extensive loss of soft tissue and of the mandible present more varied and complex conditions. The destruction of soft parts may be moderate in amount, or great, and is not necessarily in proportion to the amount of bony loss. While in these cases too much bony substance is destroyed to admit of later consolidation of the mandible, nevertheless the remaining portions must be faithfully maintained in an anatomical position in preparation for later restorations, or for bone grafts, if such is indicated in the given case.

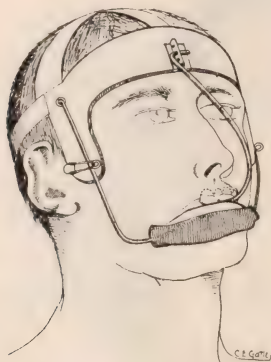


Fig. 22

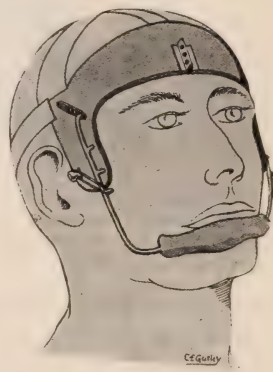


Fig. 23

Fig. 22.—The external lip support consists of a piece of gutta percha moulded to the lip and attached to an irregular U-shaped wire. The ends of the wire are bent at right angles and inserted in the headgear at the temporal region, while elastic bands applied at the level of the ear cause backward pressure on the lip. In this case, the median wire is soldered to a removable upper cap splint in order to give the necessary security.

Fig. 23.—A lip support similar to that shown in Fig. 22. The application of the elastics at an oblique angle and the substitution of grooves for the holes give backward and also upward pressure.

Even though there be gaps in the mandibular arch, the splint with "T" attached is used (*Fig. 8*) in accordance with the availability of teeth for retention, as previously outlined; but the vulcanite appliance is of greater bulk, and even in some instances constructed in sections to allow easier introduction to the mouth, the orifice of which may be diminished plastic operations. Special care is taken to reproduce the symphysis and other features of the mandible. (*Fig. 9*.)

While in these cases it is more common to find the loss confined to the cheeks or chin, in certain others it occurs in the sublingual region and upper aspect of the neck. (*Figs. 10 and 11*.) Two methods might be used to treat the latter condition. It is possible to allow the sublingual wound to close; but the lower lip draws down and the chin retracts to form a pronounced deformity. (*Fig. 12*.) Again, the tissues

of the lip and chin could be held in a normal position by appliances, allowing the wound to slowly reduce itself to a small opening. (*Fig. 13.*) From a surgical point of view it is easier to close the resulting perforation of the sublingual tissues than to raise the lip and chin in the former case. (*Fig. 12.*)

Where the presence of teeth for purposes of anchorage permits, a vulcanite appliance is used over a band and arch splint with a "T". (*Figs. 10 and 15.*) The anterior tip of the appliance is extended, like an exaggerated symphysis, to protrude from the anterior (mental) bor-

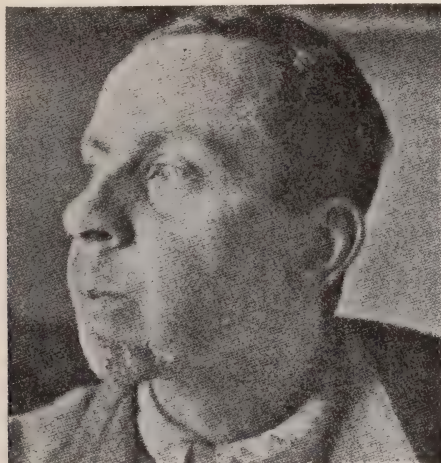


Fig. 24.—A later photograph of case illustrated in Fig. 20.

der of the wound, making it impossible for the chin to slip or contract downward. (*Fig. 15.*)

In case of absence of lower teeth, a plate, is constructed with sufficient bulk and fulness at the symphysis, and is controlled by the occlusion with the upper teeth. (*Figs. 16, 11 and 17.*)

#### EXTRA-ORAL

*External supports.* While intra-oral supports and appliances are essential yet a secure and practicable external appliance is often needed. Many types of the latter have been designed, and many materials have been used in their construction, but by experiment and experience the following has been found to be satisfactory and easily adaptable.

A headgear, constitutes the foundation of the external supports. Gutta percha 4 mm. in thickness (as is used in orthopædic surgery) is cut to fit the forehead and temporal regions, softened in hot water and then bandaged in place until it has regained its natural hardness. The headgear is completed by the addition of webbing straps. From the lower ends of the gutta-percha—at about the level of the tragus of the



ear—a heavy wire arch (No. 12, A. G.) is attached, which passes just in front of the mouth. A stiff wire of (No. 14, A. G.) also passes vertically over the nose from the median line of the arch to the median line of the gutta percha. (*Fig. 18.*) After the headgear has been fitted, the occipital region of the head may be shaved, and adhesive tape used to stick the corresponding piece of webbing to the skin. (*Fig. 19.*) Thus either the gutta-percha base, or the arch, are available as a firm anchorage for nasal, facial, intra-oral or extra-oral attachments, and may be modified in details to meet the requirements of an individual condition.

*Lip support.* In certain instances the anterior part of the mandible may be extensively shattered, leaving the soft tissues of the lower lip and

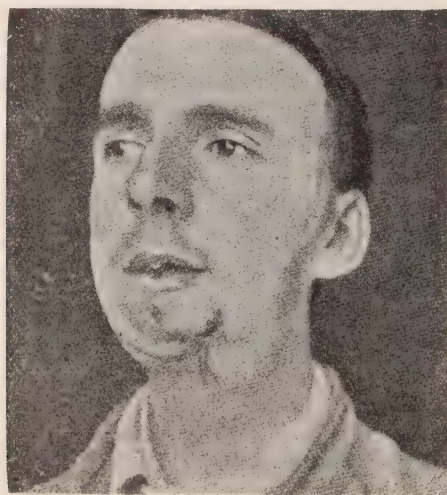


Fig. 25.—A later photograph of case shown in Fig. 21. The scar under chin was not incised.

chin intact. (*Figs. 20 and 21.*) External support may be a useful adjunct after the usual fixation of the remaining bony parts and the necessary intra-oral appliances have been adjusted.

The external lip support consists of an irregular U-shaped wire (No. 14, A. G.), bent to follow the contour of the face. The ends rotate in holes in the gutta percha at the temporal region. Pressure is brought to bear by a small piece of gutta percha which is moulded to the lower lip and embedded in the wire. Elastics pass from the headgear to the wire at the level of the ear. Slight modifications may be made to exaggerate the action of the appliance; the direction of the elastics may be altered, and instead of the holes for the ends of the wire in the headgear, grooves may be substituted, so that, by their direction, upward and backward pressure on the lower lip is effected. (*Figs. 22 and 23.*) After

the wounds are completely healed, the ears are excised and replaced by skin tissue from side of the chin. (*Figs. 24 and 25.*)

*Chin support.* In some cases of extensive injury, there is contraction below the chin, and pressure is needed over a larger area to counteract it. In this event gutta percha is moulded to fit the sub-maxillary region, and connected to the headgear by different means to suit the requirements of the case in hand. Sometimes simple elastic attachments give the required force (*Fig. 26*), and sometimes connections are needed to give a more positive control. It is often desirable to gain upward and forward pressure, and for this action the chin piece is connected by two vertical rods which are controlled by two sets of elastic bands. (*Fig. 27.*)

While the chin pieces serves to control the contraction of the soft tissues, at the same time they tend to reduce the displacement of fragments of the mandible in cases of severe comminution.

*Nasal supports.* Among facial wounds those of the nose form a



Fig. 26

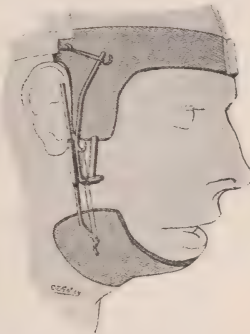


Fig. 27

Fig. 26.—Headgear with a gutta-percha chin piece, moulded to the chin and sublingual region, and controlled by a pair of elastic bands at either lateral extremity.

Fig. 27.—A chin piece used when upward and forward pressure on the tissues is required. The rods of the chin piece pass upward through metal tubes. The tube carries an irregular-shaped wire, whose lower end is bent at a right angle to allow rotation in a second tube attached to the headgear, and whose upper end passes to the temporal region. The lower elastic causes upward pressure, while the elastic at the temporal region gives the forward pressure.

considerable number, and present difficult problems. The satisfactory reconstruction of the nose is perhaps the most difficult branch of plastic surgery, and if by early interference, either mechanical or surgical, the deformity can be avoided or minimized, no effort should be spared.

(*To be continued.*)



# CORRESPONDENCE

## ECHOES FROM THE OHIO STATE SOCIETY MEETING

FRANK W. SAGE, D.D.S., CINCINNATI, OHIO

**A**NOTHER BIG MEETING of the Ohio State has come and gone. Scores, hundreds met old-time friends, strangers to be thenceforth cherished as new friends, swapping stories, exchanging views and opinions on the latest fads in dentistry, often seriously occasionally facetiously.

The wonder of it all is that more dentists do not appreciate this annual opportunity to meet in social converse with friends, eat with them, sleep with—or room with them, share the good cheer of the occasion. For less than twenty dollars one may come to Columbus from the remotest part of the state, room at a first-class hotel, get excellent meals, and return home with renewed vigor for the daily tasks, having gained something to engage his thoughts for months.

Yet a majority of good—and not so good—fellows in dentistry, disparage all this. You will hear them demanding, "What good do you get out of your conventions? You hear a lot of high-brows read essays on subjects not at all or only remotely concerning dentistry. Or it may be you listen to some fakir with a new variation on some method old as the hills for taking impressions or what-not, something he has tried once, and on the strength of that one trial, has prepared a paper, with which he rushes off to announce to the dental world his new wonder. Having read it before an audience of awe-stricken commoners in the profession, he esteems himself a sort of demi-god, ever after. Bosh!"

Doubtless this caustic wholesale denunciation does yield a modicum of truth, after being duly sifted. On the whole however, it will not do to take it seriously. Much is to be gained from papers airing even alleged improvement; others may be stimulated to further effort, and a really valuable improvement result. Geo. Stevenson, who made the locomotive engine a success, studied long to improve on the suggestions of several who preceded him, in the matter of providing a way of keeping up steam by air draft, before he stumbled on the idea of making the steam exhaust draw the flame through the boiler tubes.

As to the "high-brows," by which designation the self-constituted critic probably means the research men and others who go somewhat aside from dentistry proper, to instruct and entertain along allied lines. Is such peculiar service not really worth while? We are reminded that

they vaunt important discoveries, say in bacteriological fields, yet in their conclusions fail of unanimity. Which must be admitted.

Yet that toward which their investigations point, is of gravest importance to dentistry, to our patients especially. Shall we discourage all this, content to sit passively waiting for the great problems to solve themselves?

Some dentists are so constituted, mentally, that they deem it a vain thing for any in the profession to aspire to rise above certain prescribed limitations appertaining to dentistry *per se*. They tell us the proper sphere of dentistry is to extract, fill, make artificial appliances, etc., not to meddle in matters pertaining to medicine. This view may indeed be based on a somewhat too conscientious adherence to dentistry as dentistry.

In all this there seems to be some confusion arising from confounding dentistry *and* the profession of dentistry. We have long heard and have read much concerning the need of elevating dentistry. Now dentistry, the science and art of ministering through certain offices to tooth pains, to supplying lost function, and all that, requires no elevating, no apologies. Dentistry has well recognized limitations, and no extreme of human effort ever can render it as important as general medicine, since it ministers in a smaller way to the well-being of patients, having to deal only remotely, as a usual thing, with the issues of life and death. If all that the years of development in dentistry could or should be utterly blotted out, its one remaining function, that of extracting, easily might be assumed by the physician. But on the other hand, the dentist, with such medical attainments as usually pertain to the individual dental practitioner, could not assume the physician's burdens and responsibility.

In other words, while dentistry has always been eminently respectable, *per se*, it is not, never can become, as indispensable as medicine. Let us not deceive ourselves as to all that.

This brings us finally, to another consideration; although dentistry needs not to be elevated, the body of the dental profession does need elevating. The fact that these "high-brows" have gone somewhat aside from the immediate requirements of dental art and science, contributes to such elevation. Their methods are legitimate, commendable. It is the man who makes the profession respected, not the reverse. I have written "respected" not "respectable." The late Thos. B. Reed, speaker of the National House of Representatives, tells us in his autobiography, that he derived both profit and pleasure from familiar converse with his barber, a man of much intelligence. The late Tom Corwin secretary of the U. S. Treasury in Millard Fillmore's Cabinet, for ten years a U. S. Senator, Governor of Ohio, in 1842, was intimate with a colored barber in Hamilton, Ohio, a man of rare attainments intellectually. He entertained him more than once, at his own table.



When it comes to an ultimate analysis, it may be we shall find that all this did not tend to elevate the barber's art. It might be argued quite logically too, that nothing the individual dentist may do, can elevate dentistry. Perhaps this is true. Nevertheless, human nature is so curiously constituted, that for all practical purposes, men who do things outside of dentistry, do actually dignify their profession. It cannot be denied. People reason somewhat after this fashion, doubtless: This man is a man of intelligence; he does things requiring brains to do. Hence his calling, dentistry, must be one more to be honored than we all along have supposed. Accordingly they honor him, *and* his profession. The sentiment seems to be to this effect: Dentistry must be something worth while, or men of his ability would not be found following it.

The dentist, in his own community, large or small, only too often fails of the respect he longs for and might gain, simply because he lives like a clam in his shell; buries himself in office or laboratory, secludes himself in his home, makes no effort to impress himself on his fellow citizens. While others no more deserving of notice than himself, interest themselves in local politics, share in enterprises looking toward civic improvement, the general welfare of the community, he remains at home, inactive, evincing no interest in such matters. Then he laments that he is a member of a profession which commands slight respect from his townsmen

The matter, in a nutshell, is not is dentistry respected as it should be, it is, is the dentist himself respected as he should be? Take any man in the community, the harness maker, the baker, the book keeper, not one of them has an advantage over the dentist. Not even the most influential lawyer or doctor in the community, has such advantage. It is all a question of one's affirming and proving his importance, nothing else whatsoever. The physician, be he a man who relies solely on his mental equipment in his special line, may be less respected than the dentist, if he fails to impress himself through his personality, upon people.

Let us make the individual importance; then the profession for which the individual stands, becomes automatically important

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### Preparedness League Notes and News

#### COMMUNICATION FROM THE PRESIDENT

Every day it is becoming more apparent that many of our profession who left well-established and hard-won practices are returning to find nearly everything swept away down to the lowest rung of the ladder which, through honest toil and travail, had long been passed in the upward climb.

An urgent call for help goes out from the President to every member of the League to give our brothers the fullest measure of co-operation right away. *Tomorrow* will not do. *It must be done today.*

Go to each returned dental corps officer in your neighborhood and ascertain his circumstances. Call all dentists together surrounding his location and get them to send patients to him whenever possible. You can well afford to make this sacrifice. Make it a point, also, to acquaint the public of his return to practice and of his need of support. You will be surprised at the assistance you can render in thus discharging a positive obligation.

It is distressing to report that undue advantage is being taken of our boys in this way and we sincerely trust our members will do all they can to re-establish them in that which justly belongs to them. He who takes undue advantage of these conditions does not merit professional relationship with his confreres.

You will learn in due time that these men have sacrificed more than we at home were aware of and we would emphasize the truth that he who attempts to gain through their misfortunes must suffer eventual defeat.

The President earnestly requests all returning dental corps officers to communicate with him that such assistance as is possible may be rendered.

#### OUR FUTURE

The League is gradually becoming adjusted to the new conditions and its officers are planning to develop into a broad organization of international character devoted to public service work and such activities as come within the rightful field of our energies.

#### POST-WAR COURSE OF THE LEAGUE

The second course given at New York from February 3rd to 8th, inclusive, proved to be an intellectual feast of the rarest quality. It would be impossible to give an adequate idea of its value to those who were fortunate enough to enjoy it. It was an unqualified success!

The demand for a special course in Post-War Oral Surgery and Prosthesis is now established and the League will be glad to correspond with all who wish to take it, with a view of bringing it within reach. We hope to carry it to every large city in this country.

#### RED CROSS HOME SERVICE WORK

General co-operation of League officers and members is being experienced throughout the country by the Red Cross Home Service Section. This most worthy object of giving needy families of our soldiers dental treatment should be taken part in by every loyal dentist.

We would especially urge your care of the families of those who made the supreme sacrifice. We have a solemn duty to perform toward all such, especially those who are handicapped by lack of means and we must keep constantly in mind that our work is not yet done. Our slogan must be, "*Carry On.*"

J. W. BEACH, *President.*



# EDITORIAL

## A DIFFERENT VIEWPOINT

In the past when our dental associations met, we were greeted by bold headlines in the newspapers announcing to the public that "The Tooth Tinkers" were in session. Or, "The Tooth Pullers" were holding a meeting. "The Men with a Pull have gathered to discuss the raising of fees," etc.

The editor permitted his reporters and head-liners to slur the dental profession as much as they pleased, and rarely, if ever, was there any editorial comment. Newspaper men seemed to look upon dentistry as a joke and gave the public a poor impression of its real worth.

The dental profession for years tolerated these newspaper gibes, or ignored them, and without blare of trumpets continued its march onward and upward until it forced a recognition by achievements that have convinced the facetious newspaper men that it was through their own ignorance and not that of the dental profession that the meetings were looked upon as mediocre by the reading public.

For some time past the dental profession has been accorded different treatment by the newspapers, and on several occasions praiseworthy editorials have appeared in the daily press regarding dentistry, one of which was published in the *Columbus Evening Dispatch* the first day of the recent meeting of the Ohio State Dental Society and is as follows:

### THE DENTISTS.

"We have with us the Ohio State Dental Association, in convention assembled. A body of high-class professional gentlemen who are serving mankind as faithfully and well as any other class of professional men. We bid them Godspeed in their deliberations.

Dentistry is coming to occupy a more prominent place in the great economy of things than it has ever occupied. This is in part due to the fact that we are learning the value of dentistry, and in part to the fact that the dentist themselves are improving their standing in the scientific world through their training and research.

In the matter of reclaiming men for the army alone, the dentists of this country have done much to help win the war—and the winning of the war is the subject that first occurs to one in fixing the place of any profession these days. Tens of thousands of soldiers are in the ranks today who would not be there but for work of the dentists. As for the

misery relieved by the dentist after the boys get into the service, that can not be calculated.

When we entered the war the dentists of this country volunteered their services in large numbers. Practically all dentists undertook to treat the teeth of all volunteers and selected men, free of charge. The community hardly understands the meaning of all of this—but it ought to. And the community ought to give to these splendid men the credit which they deserve in helping along with the winning of the war, for it was sacrifice upon the part of the dentists.

The government itself was forced to recognize the place of the dentists in the army, and to create a dental corps. It may not be generally known that until quite recently the army paid little attention to the dentists, and recognized them only as inferior officers. Today we have dentists in the army ranking as lieutenant-colonels, as is proper that they should. This is due to the activities of such gatherings as we have with us today—to the dental organizations of the country."

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### NERVOUS CHILDREN

Patience is the one essential in dealing with nervous children. If you get out of patience with them you only add fuel to the flame.

A case recently was reported of a boy of ten years who, on being vexed, and often without apparent provocation, would clench his hands and make the most frightful contortions of the muscles of his face and head until mother feared he might be idiotic. But this was not so. He was the brightest boy in his class in school, fond of reading and of natural history, but he was of a highly-nervous temperament and had not been taught to control the little wires with which he was strung.

Now this is no single case. There are thousands of children who give way to their nerves in similar fashion. Talk to them, saying that these curious little nerves should be made their little servants, not their masters; never whip them. A man or woman who whips a nervous child is on a level with brutes that have no reason. Encourage them; help them; be patient with them. They are the making of our future successful men and women, for they will work hard at whatever they undertake.

Brace up your own nerves first, and then be indulgent toward the capers of your over-nervous children.

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# SUGGESTIONS

CONDUCTED BY F. R. CHAPMAN, M.S., D.D.S., COLUMBUS, OHIO

(To Our Readers: Give others the benefit of your practical suggestions by sending a description of them to Dr. F. R. Chapman, Schultiz Building, Columbus, Ohio.)

## Sharpening Pyorrhea Instruments

Always round off the corners to avoid cutting any grooves on the roots. This is very important.

—Earle H. Thomas, Chicago, Ill., *Dental Review*.

## Accidental Puncture in Rubber Dam

Should the rubber dam be accidentally punctured after it has been ligatured in position, I have found, as a temporary expedient, that a wisp of cotton wool, saturated with de Trey's neutral varnish, pushed into the puncture, will make an efficient watertight plug.

—G. C. Nicholson, *Commonwealth Dental Review*.

## Soldering Contact Points on Inlays and Crowns

The quickest and easiest way is to heat in the flame until red and then cool in the air, which oxidizes the whole surface. Now by means of a toothpick (one of the very few uses a toothpick serves), place a smear of flux paste just over the area where the solder is to flow; place a piece of solder, and flow—it will not flow where there is no flux.

—Earle H. Thomas, *Dental Review*.

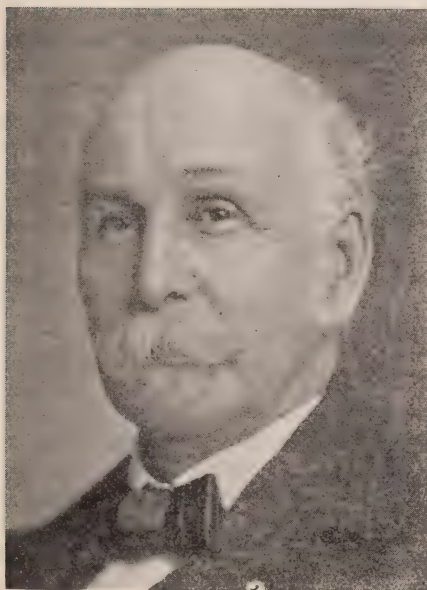
## Deodorization of Dentures

After a vulcanite denture has been worn for a time, it will develop and impart to the breath a peculiar offensive odor. This odor may be overcome without any injury to the denture on the oral tissues by keeping it overnight in water to which has been added some aromatic sulphurous (not sulphuric) acid. About ten to fifteen drops of the acid to a tumbler full of water will be found effective. In the morning the case should be washed with soap and water.—F. W. F., *Pacific Dental Gazette*.

Gold foil fillings properly placed are the best fillings at our command, and gold inlays properly made are good fillings but I venture to say that if the operator placed good amalgam fillings in 50 per cent. of the cavities filled with gold inlays he would have served his patients far better. If this is true the great bulk of the gold inlay operations is another example of wasted effort.—Fred W. Gethro, *Dental Review*.

# OBITUARY

## JOHN A. WATLING



JOHN A. WATLING

Professor John A Watling passed away at his home in Washington, D. C., on Jan. 17th 1919.

He was born in Woodstock, Ill., in 1839, and graduated in dentistry at the Ohio College of Dental Surgery, Cincinnati, in 1860, being, at the time of his death the oldest living graduate of that institution.

In 1875 he founded the Dental Department, University of Michigan, and served as dean for several years. He was professor of operative and mechanical dentistry in the college, and taught in the institution for twenty-eight years.

He retired from active practice at Ypsilanti, Mich., in 1903, and in 1905 located in Washington, D. C. Subsequently he served for four years as professor of dental metallurgy in the Georgetown University.

Accompanied by Mrs. Watling he spent much time in his later years in travel both in this country and in Europe.

He was a man beloved by all who knew him and on the fiftieth anniversary of his

marriage, May 5th, 1914, former students of the University of Michigan presented to him and Mrs. Watling a beautiful statue, La Frontiere, in token of their great esteem. This statue of golden bronze is three and one-half feet high, and the face and hands are of ivory. It was made in Vienna and received in the Paris Salon in 1913.

He is survived by his wife, Mrs. Eunice Wright Watling, of Washington, D. C., by a son J. W. Watling, and daughter Miss Lucille Watling, of Detroit, Mich.

His remains were laid at rest in his old home town, Ypsilanti, Michigan.

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## H. B. PECK

In December, at Reed City, Mich., Dr. H. B. Peck. He was 91 years old a few days previous to his death. Had practiced dentistry in Reed City forty years—and sixty years altogether. He was working on a plate the day following his birthday, when I called on him and up to a few months ago was very proud of his steady hand.

He studied under a preceptor in New York State and attended Pittsburgh Dental College.

He has two grandsons—Drs. H. B. and G. A. Crawford, practicing dentistry in Grand Rapids. Had life membership in Masonic Lodge at Reed City.

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## EDWARD ROWAN



EDWARD ROWAN

Edward Rowan, founder and president of Edward Rowan, Incorporated, died on January 19th 1919, at his home, 629 East 163rd Street, New York City, after a short illness.

Mr. Rowan was well known throughout the dental world, and was a foremost manufacturer of dental filling golds. In 1878, he commenced, on his own account, to manufacture goods of his own design, which were principally Decimal Gold Foils adapted to dental purposes.

As a refiner of gold for dental purposes, his reputation is world-wide. If one travels throughout the civilized world, be it Japan, China, India or Africa, in fact, wherever dentistry is known or practiced, Rowan's Extra Pliable Filling Gold is used.

On April 7th, 1909, the United States Government issued to Edward Rowan an assay certificate showing 1,000 fine, or what is termed by the Government as absolute or proof gold. As far as is known, this is the only certificate for 1,000 fine gold ever issued by the United States Government.

The steady growth of his business made larger facilities necessary, and in the year 1890, the business was moved to its present address. By reason of the further growth of the business, the factory was again enlarged in 1905; again in 1908, and an additional enlargement of plant was completed in 1910. In 1908, the business was incorporated.

Edward Rowan was a man of sterling character and strong convictions, and was held in high esteem by his friends and acquaintances. He did not know what selfishness was; quiet in his manner, sincere in his friendship, with a nobleness of character that won for him the love and respect of all who knew him.

He was a member of the American Dental Trade Association; Dental Manufacturers' Club; Dental Gold Manufacturers' Association of America; Bronx Chamber of Commerce, and several fraternal and charitable organizations.

Edward Rowan was married to Miss Margaret J. Johnston, in 1878, who with two sons and two daughters, survive him. Funeral services were held at St. Augustine's Church, Bronx, where a solemn High Mass of Requiem was sung. Interment was in Woodlawn Cemetery, New York City, on January 22nd, 1919.

## HARRY S. HASLETT

Dr. Harry Stewart Haslett, professor of prosthetic dentistry and anesthesia in the University of Pittsburgh, died January 19. Dr. Haslett was born in Allegheny County, in 1867, and had resided in Pittsburgh all his life. He was educated in the public and high schools of Allegheny and in Geneva College, and in 1896 was graduated from the Pennsylvania College of Dental Surgery in Philadelphia. For many years he practiced in

the Northside. For the past fifteen years he had been connected with the University of Pittsburgh.

Dr. Haslett was a member of the Reformed Presbyterian Church, was a past president of the Odontological Society of Western Pennsylvania, a past grand master of Duquesne Chapter of the Psi Omega fraternity, and was a member of Bellefield Masonic Lodge No. 680. He leaves his widow, Mrs. Dollie Haslett; one son, Dr. W. C. Haslett; two sisters, Mrs. John Roberts and Mrs. Eugene McCort, and one brother, Walter Haslett.

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### FORREST L. WILLIAMS

Ludington, Mich., Feb. 12.—Dr. Forrest L. Williams passed away this morning at 5 o'clock at Paulina Stearns Hospital following an extended illness due to tuberculosis. He had been at the hospital for the past three months and though his recovery had for some time been considered doubtful his death comes as a distinct shock to his many friends in the community.

Forrest L. Williams was born in Ludington, on April 10, 1877. His boyhood was spent in this city where he attended the public schools and graduated from the local high school. He attended the University of Michigan, graduating in 1901.

He started to practice his profession in South Lyons, Mich., from there moved back to Ludington where he practiced a short time and later moved to Kingsley, Mich. In 1909 he located in Pentwater, Mich. Shortly after removing there he was united in marriage to Miss Alice Abbott. Five years ago Mrs Williams died in Ludington, where she had been brought from her home in Pentwater for medical treatment.

Two years ago Dr. Williams was forced to give up his practice in Pentwater because of ill health and went to San Angelo, Texas, for medical attention. After several months there, physicians pronounced him cured and he resumed his work opening an office in San Antonio, Texas, in July, 1917. Last August he again suffered a breakdown and was obliged to return to Ludington where he has since been under physician's care.

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### CHARLES DUDLEY WINSOR

Dr. Charles Dudley Winsor of Providence, R. I., and Wickford, the well-known practicing dentist, died at his home in Wickford today, in his fifty-first year. He was the owner of some four hundred acres at Wickford, and built the bungalow on the height known as Hall's Rocks. He was a passionate lover of nature. While he made attractive colonial houses of several old farmhouses on his property, restoring the orchards as well, he also improved and developed his woodland with loving care. He brought ancient and injured forest trees back to flourishing life by careful tree surgery and made his groves record the value of scientific forestry.

He was born in this city Nov. 25, 1868. Having attended the public schools, he went into the dental office of Dr. M. S. Eldredge, and later was with Dr. W. P. Church. In 1890 he went to the Philadelphia Dental School of the University of Pennsylvania and graduated in 1892. He returned to this city for a time, associated himself with Dr. Church, and then opened an office at 86 Weybosset Street, where he has practiced ever since. In 1910 he went to Wickford to live, being drawn by the scenic charm of the rocks and woods about Hall's Rocks. He made his home there for the remainder of his life.

Dr. Winsor joined the Rhode Island Dental Society when he entered into practice here and served as Librarian of the society several years, and also as a member of the executive committee. He was a member of the New England Dental Society.

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## S. H. GUILFORD

Dr. S. H. Guilford, Philadelphia, one of the well-known dentists and educators died at his home on January 18th, 1919, aged 78 years.

Dr. Guilford was born in Lebanon, Pa., in 1841. He graduated from Franklin and Marshall College, receiving his A. B. degree in 1861, A. M., in 1864, D. D. S., from Pennsylvania College Dental Surgery in 1865.

In 1881 he was given the chairs of Professor of Operative Dentistry, Prosthetic Dentistry and Orthodontia in the Philadelphia Dental College and taught these branches up to the time of his death. He was elected Dean of the college in 1895.

He served in the civil war with the 127th Pennsylvania Volunteers. Dr. Guilford was the author of a work on Orthodontia, which passed through several editions. He also gave the profession a work on Nitrous Oxid, and contributed chapters to the American System of Dentistry and other standard text books.

## ALONZO J. DOUDS

Dr. A. J. Douds, aged 81 years, for sixty years a practitioner of dentistry in Canton, Ohio, died at his home, January 23rd, 1919.

Dr. Douds was born near Middlebranch and came with his parents to Canton when about 17 years of age. He had resided in this city since that time. He received his education in the dental profession in Philadelphia and immediately started to practice in Canton. At the time of his retirement from active business about five years ago, he was associated with his son, Dr. Frank F. Douds, under the firm name of A. J. Douds and Son, Dentists. Dr. Douds occupied the present office of the firm on Tuscarawas Street West, for nearly thirty years.

Dr. Douds was the oldest member of the Stark County Dental Society and last June the society honored him with a complimentary banquet and took the occasion to express its high esteem for him through a congratulatory address delivered by Dr. L. S. Vinez.

Dr. Douds was a veteran of the Civil War and a member of the G. A. R. He was a life-long member of the First Methodist Episcopal Church and was among the leaders in the work of the congregation.

Dr. Douds is survived by four children: Dr. Frank F. Douds, of this city; Herman J. Douds, of New York City; Mrs. J. C. McConkey, of Canton; and Mrs Perry Van Horne, of the home. He also leaves one brother, Dr. B. J. Douds.

At the funeral six dentists acted as pall bearers. They were Dr. J. H. Wible, Dr. C. W. Potter, Dr. Frank Manchester, Dr. T. J. Phillips and Dr. J. F. Dougherty, all of Canton, and Dr. Vinez, of Louisville.

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# NATIONAL DENTAL ASSOCIATION ANNOUNCEMENTS

Dentists of America—Ten-SHUN! Right dress! Fron-n-n-nt! At ease! Res-s-s-st!

You will now listen to a brief message from Major C.V. Vignes, Dental Corps, U. S. Army. The major—

Wait a minute gentlemen. Your pardon. That's wrong. It would have been right a few days ago; but today Major Vignes is just plain Dr. C. V. Vignes, D.D.S., president of your national organization, back again in civilian life, practicing his profession—and yours—in New Orleans.

So, talking as one dentist to another, he wants to let you know that even though you're not due in New Orleans until October, 1919, still the ancient city is mapping out plans for your reception just as if you were coming to drop in for the next week-end. That's a way New Orleans has with her guests, he wants you to understand.

And here's his message:

Whatever your plans may be for 1919—make sure that they include attending that convention in New Orleans in October.

It will be more than an ordinary national convention.

It will be more, even, than a national convention in a city that proudly counts among its citizens more dentists than any other city in the South.

It will be a convention where you'll get more, even, than the benefit of mingling with the best dentists of America—which is to say the best dentists in the world.

It will be a convention in a city that is looking ahead and planning to make your visit in October, 1919, one that you'll remember through every one of the years to come—and that has the facilities to do it.

Some of you have been in New Orleans before. You know!

For those who haven't, here is the briefest of sketches of what awaits you:

Do you like comfortable quarters, uncrowded, when you attend a national convention? New Orleans, through the experience of years of Mardi Gras throngs, can house in her hotels nearly fifty thousand visitors at once, without resorting to cots in the hall or blankets on the billiard table. Those hotels can give you anything offered by any hotel in the world in comfort, in quiet and in luxury. And their rates are human.

Do you like the best cuisine in the world? New Orleans has it, at her world-famous restaurants with world-famous chefs—chefs that in



some cases have been five generations in the kitchen. Do you know the joys of oysters Rockefeller, of planked pompano, of gumbo Creole, of crawfish bisque, of jambalaya, of dripped coffee? They're waiting your arrival.

Do you like picturesque scenes—sites immortalized in a history that goes back unbroken for two centuries? Here it is, unchanged, before your eyes as men now dead for generations once looked upon it—men who made that history you have read.

For, while "across Canal Street" the "American City" offers skyscrapers and garden districts of beautiful residences, rose-embowered all the year round, the Old French Town yields sights no visitor ever forgets.

Here, in October, 1919, you'll see the historic Place d'armes, where the Casket Girls of France's Louis landed, where landed the exiled Acadians, where Jackson marched forth to the battle of New Orleans. You'll see the St Louis Cathedral, where he celebrated victory; the Chalmette battlefield, where he won the renown that led to the White House; the Cabildo, in whose stone-flagged rooms the Province of Louisiana was transferred to the United States; Don Alexandro O'Reilley's headquarters, where the picturesque and blood-thirsty Spanish captain-general ruled in his Reign of Terror in 1700; the house built to receive Napoleon, when he was to have been rescued from St. Helena; the coffee house frequented by Jean Lafitte, Barataria pirate, and his mate, Dominick You, who was to lead the expedition to rescue the conquered Frenchman; the Old Absinthe House, built of tiny, flat bricks brought in sailing ships from France, with its stone bar eaten deep by the water drops of countless dripped absinthes; Congo Square, scene of ancient negro Voodoo dances and incantations; the old French Market, whence will come the delicacies of your table; the old French Opera House, first in America, where Adelina Patti made her debut; the Archbishopric, still inhabited, oldest original house west of the Alleghanies; the duelling grounds in City Park, where rapiers once flashed beneath the oaks, draped in Spanish moss—but pages could be filled with what you'll see.

Nor is all historic. You'll see an ancient port, now the greatest and most modern American port next to New York, with grain elevators, cotton warehouses and public belts railroad owned by the city. You'll see nine thousand-ton steel ocean-going freighters being built inside the city limits.

Should you care to combine with the convention some hunting or fishing or yachting or bathing or golfing—the best in the South is within half an hour of Canal Street.

"Southern Hospitality" isn't a joke or a catch-word here. It's a tradition. Almost a religion.

And it's at your command. Come try it.

Fraternally yours,

C. V. VIGNES, *President.*

J. P. WAHL, *Chairman Local Com.*

# SOCIETY ANNOUNCEMENTS

## **The American Society of Orthodontists**

The Nineteenth Annual Meeting of the American Society of Orthodontists will be held in St. Louis, Monday, Tuesday, and Wednesday, March 10th, 11th, and 12th, with headquarters at the Planters Hotel. An excellent program is assured.

F. M. CASTO, *Secretary*.

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## **South Carolina State Board**

The next meeting of the State Board of Dental Examiners will be held at Bamberg, S. C., commencing promptly at 9:00 o'clock, Monday morning, June 16th, 1919. All applications should be in the hands of the secretary by June 6th.

R. L. SPENCER, *Secretary*.

Bennettsville, S. C.

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## **Iowa State**

A special meeting of the Iowa State Board of Dental Examiners for the examination of applicants will be held at Iowa City, Iowa, commencing March 10, 1919, at 9:00 A.M.

For further information address the secretary,

DR. J. A. WEST,

417 Utica Bldg.

Des Moines, Iowa.

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## **Kentucky State Dental Association**

The Fiftieth Anniversary-Jubilee Meeting of the Kentucky State Dental Association will be held at Louisville, Ky., June 9-10-11-12, 1919.

A Post Graduate Course of unusual interest has been planned.

Address all correspondence to

W. M. RANDALL, *Secretary*.

Louisville, Ky.

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## **The Texas State Dental Society**

The Thirty-ninth Annual Convention of the Texas State Dental Society will be held at Waco, Texas, April 21st, to 24th, 1919.

Several men of national prominence will conduct the post-graduate feature of the meeting, which will supplement the program of papers and clinics by members of the Society.

J. G. FIFE, *Secretary*.

736 Wilson Building, Dallas Texas.



### Northern Ohio

The Northern Ohio Dental Association meeting will be held in Cleveland, Ohio, Monday, Tuesday and Wednesday, June 2nd, 3rd, and 4th, at Hotel Statler.

GEO. B. SMITH, *Secretary*.

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### Indiana State Board

The next meeting of the Indiana State Board of Dental Examiners will be held at the State House, Indianapolis, June 23rd to 28th, inclusive. For application and instructions, write to

H. C. MCKITTRICK, *Secretary-Treasurer*.

605 Hume-Mansur Bldg., Indianapolis.

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### Michigan State

The Sixty-third Annual Meeting of the Michigan State Dental Society will be held at the Hotel Statler, Detroit, April 7th-12th, 1919.

To meet the demand for dental meetings that teach, another post-graduate course, greatly improved and added to, will be put on by the Detroit Dental Clinic Club.

All Michigan talent will also make up the general program.

CHALMERS J. LYONS, *President*.

CLARE G. BATES, *Secretary*.

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### Illinois State

The Fifty-fifth Annual Meeting of the Illinois State Dental Society will be held in Peoria, Illinois, May 13, 14, 15 and 16, 1919. The officers of the society are as follows: L. B. Torrence, President, Chester, Illinois; G. D. Sitherwood, Vice-President, Bloomington, Illinois; J. P. Luthringer, Secretary, 507 Jefferson Building, Peoria, Illinois; T. L. Grisamore, Treasurer, Chicago, Illinois; G. H. Henderson, Librarian, Chicago, Illinois.

Most sincerely yours,

J. P. LUTHRINGER, *Secretary*.

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### Vermont State Board

The next meeting of the Vermont Board of Dental Examiners, for the examination of candidates to practice in Vermont, will be held at the State House, Montpelier, commencing at 2 P.M., on June 30th, 1919, and continuing for three days.

To be eligible for examinations a candidate must be : *First*, twenty-one years of age. *Second*, a graduate of a high school of the first class, and *third*, a graduate of a reputable dental college.

Applications must be in the hands of the Secretary not later than June 21st. For further information apply to

HARRY F. HAMILTON, *Secretary*.

Newport, Vermont.

### Missouri State

The Fifty-fourth Annual Meeting of the Missouri State Dental Association will be held at Hotel Statler, St. Louis, April 14th, 15th, and 16th, 1919.

The first two days of the meeting will be devoted to clinical instruction in the most advance phases of modern dental practice, by a staff of competent and experienced teachers. The special clinicians and their subjects are: Dr. Justin D. Towner, Memphis, *Periodontia*; Dr. George Thompson, Chicago, *Dental Ceramics and Removable Bridges*; Dr. Boyd Bogle, Nashville, *Radiodontia and Oral Surgery*; Dr. Gillette Hayden, Columbus, *Preventive Dentistry*; Dr. S. L. Silverman, Atlanta, *Conductive Anesthesia and Root Resection*; Dr. H. A. Maves, Minneapolis, *Crown and Inlay Technic*; Dr. Phillip R. Thomas, Minneapolis, *Pedodontia*.

A general clinic session of individual and group clinics will be given the afternoon of the 16th. The title of all clinics must be sent to Dr. Charles P. Grosby, Frisco Building, St. Louis, before March 24. Members of the National Dental Association are invited to attend the meeting and contribute to the clinical program.

H. CARLYLE POLLOCK

GEORGE W. HILLIAS

CLARENCE O. SIMPSON, *Chairman.*  
*Publicity Committee.*

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### Applying Arsenic to Molars

If you use the Depressed Aluminum disks with arsenic treatments no doubt you have trouble putting them in a distal cavity of any of the molars, especially the uppers. This can be easily accomplished with a little sticky wax on the right angle instrument, then put the disk to place. —Y. E. Whitmore, Little Rock, Ark., *Dental Review*.

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### To Prevent Inaccuracy While Setting Up Teeth

When making a denture inaccuracy often arises because the porcelain of the teeth, while setting them up, is harder than the plaster of the opposing model, wears it off, and this causes the tooth to occupy an incorrect position. This can largely and very easily be overcome by painting the opposing plaster teeth, before setting up, with shellac or iodine. As soon as the porcelain wears the plaster down it will show up in white spots and caution the dentist to be careful.

—F. Van Minden, Chicago, Ill., *Dental Review*.



# OHIO STATE SOCIETY

Through the generosity of the publishers of THE DENTAL SUMMARY, this space is made available for the use of the State Society and its Components in making announcements of general interest. The secretary of the State Society will use this medium as occasion requires and it is hoped that this will prove a valuable means of disseminating information to the Components and to the membership individually.

Many members have not yet paid their dues for 1919; the mailing list of THE DENTAL SUMMARY and of the *National Dental Journal* is made up from those who are in good standing, i. e. those whose dues are paid for the current year. If you have not paid yours, please do so at once and secure your journals regularly from the beginning of the year.

F. R. CHAPMAN, *Secretary.*

## Committees for 1919

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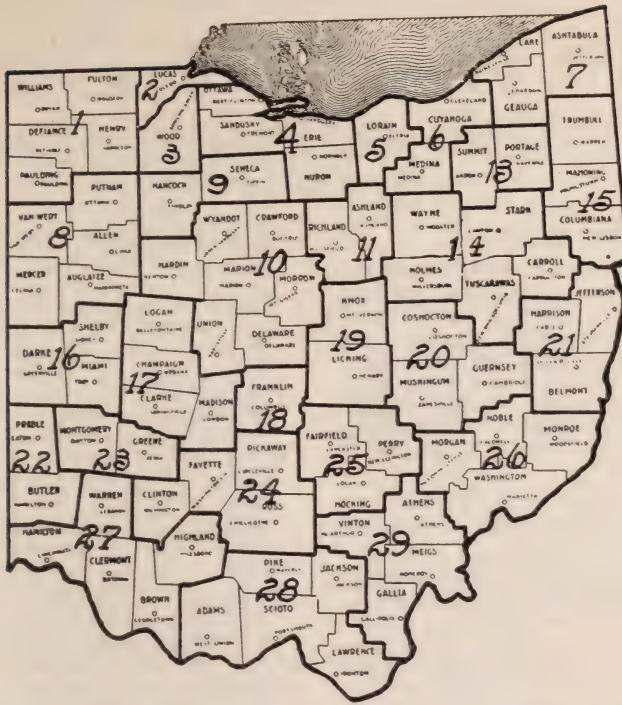
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## The Component Societies of the Ohio State Dental Society

(This list of Officers is compiled from information furnished by the Secretaries of the various Componentst where incorrect it is due to lack of information relative to elections. Secretaries are requested to keep the lis correct by notifying the secretary of the State Society or the Editor of THE DENTAL SUMMARY of the result of elections.)

- 1 MAUMEE VALLEY DENTAL SOCIETY, meets 2d Tuesday, June and Oct.—Pres., A. B. Thompson, Metamora; V. Pres., N. A. Cunningham; Rec. Sec., O. S. Applegate; Cor. Sec., H. M. Jordan, Hicksville; Treas., J. A. Benner.
- 2 TOLEDO DENTAL SOCIETY, meets 3d Friday. Pres., W. J. Dierks, 1018 Spitzer Bldg., Toledo; V. Pres., R. K. Wood; Sec., L. C. Jackson, 2205 Ashland Ave., Toledo; Treas., C. H. Cox
- 3 WOOD COUNTY DENTAL SOCIETY, meets 2d Wednesday.—Pres., F. W. Wemmer, North Baltimore; V. Pres., B. D. Roe; Sec., R. E. Milbourn, North Baltimore; Treas., T. M. Lea.
- 4 NORTH CENTRAL OHIO DENTAL SOCIETY, meets 3d Wednesday, Jan. Apr., July and Oct.—Pres., R. E. Woieslagel, Bellevue; V. Pres., A. G. Thatcher, Fremont; Rec. Sec., L. H. McDonald, Norwalk; Cor. Sec., S. H. Rogers, Sandusky; Treas., E. S. Braithwaite, Willard.
- 5 LORAIN COUNTY DENTAL SOCIETY, meets 1st Tuesday, Feb., Apr., Sep. and Nov.—Pres., W. G. Schaeffer, Amherst; V. Pres., J. A. Minnich; Rec. Sec., P. E. Maddock; Cor. Sec., J. E. Betteredge, Elyria; Treas., J. E. Trombley.
- 6 CLEVELAND DENTAL SOCIETY, meets 1st Monday. Pres. W. C. Stillson; V. Pres., Ira Saum; Rec. Sec., S. F. M. Hirsch, 5415 Euclid Ave., Cleveland; Treas., E. D. Phillips; Cor. Sec., Frank Acker, 14516 Detroit Ave.
- 7 NORTHEASTERN OHIO DENTAL SOCIETY, meets 2d Monday.—Pres., N. H. Bishop, Andover; V. Pres., H. O. Frederick; Sec., O. T. Battles, Jefferson; Treas., O. T. Battles.
- 8 NORTHWESTERN DENTAL SOCIETY, meets 4th Wednesday.—Pres., A. N. Bruzilius, Lima; V. Pres. E. A. Bobo and G. L. Brunk; Sec., J. W. Dimond, Lima; Treas., J. K. Bannister.



- 9 HANCOCK - SENECA COUNTIES DENTAL SOCIETY, meets 2d Wednesday.—Pres., T. C. Schwartzbek, Findlay; V. Pres., A. O. Cole; Rec. Sec., E. V. Burns; Cor. Sec., A. E. Mann, Findlay; Treas., V. H. Michener.
- 10 CENTRAL OHIO DENTAL SOCIETY, meets 1st Wed., Feb., May and Oct.—Pres., C. B. Emery, Marion; V. Pres., O. M. Young and F. Burger; Rec. Sec., D. G. Welch; Cor. Sec., F. R. Mann, Marion; Treas., F. C. McLaughly.
- 11 RICHLAND-ASHLAND COUNTIES DENTAL SOCIETY, Meets last Monday, Feb., June and Oct.—Pres., J. F. Winans, Shelby; V. Pres., B. W. Livingston; Rec. Sec., F. O. Eckstein; Cor. Sec., J. H. Bristor; Treas., F. H. Williams, Shelby.
- 12 STARK COUNTY DENTAL SOCIETY, meets 3d Wednesday.—Pres., J. C. McConkey, Canton; V. Pres., C. O. Carr; Rec. Sec., E. H. Alden; Cor. Sec. and Treas., B. Hugo Bowman, Canton.
- 13 SUMMIT COUNTY DENTAL SOCIETY, meets 1st Friday, Pres., W. C. Cooper; V. Pres., Jas. Connors; Rec. Sec., H. G. Haas; Cor. Sec., G. H. Dumm, Kent; Treas., C. S. Hoover.
- 15 CORYDON PALMER DENTAL SOCIETY, meets 2d Thursday, April and Oct.—Pres., G. H. Ormeroid, Warren; V. Pres., J. F. Steele and T. J. Evans; Rec. Sec., R. R. Bode; Cor. Sec., J. H. Chessrown, Wick Bldg., Youngstown; Treas., J. K. Nash.
- 16 WESTERN OHIO DENTAL SOCIETY, meets 1st Thursday, Feb., May and Oct.—Pres., R. M. Kerr, Sidney; V. Pres., R. S. Van Hise, H. V. Steinmetz and J. F. Richeson; Sec-Treas., R. R. Kelsey, Greenville.
- 17 MAD RIVER VALLEY DENTAL SOCIETY, meets 2d Monday, bi-monthly.—Pres., C. M. Evans, Springfield; V. Pres., ; Rec. Sec., C. A. Dawson; Cor. Sec., S. D. Hockman, Springfield; Treas., H. G. Butcher.
- 18 COLUMBUS DENTAL SOCIETY, meets last Tuesday, Pres. Oscar Miesse; V. Pres., D. P. Snyder; Sec., F. L. Gruber, 131 E. State St., Columbus; Treas., A. O. Ross.
- 19 W. D. MILLER DENTAL SOCIETY, meets 2d Thursday, May and Oct.—Pres., E. V. Prior, Newark; V. Pres., W. S. Deeley; Rec. Sec., J. D. Ford; Cor. Sec., L. E. Davis, Granville; Treas., W. B. Grossman.
- 20 MUSKINGUM - COSHOCTON - GUERNSEY COUNTIES DENTAL SOCIETY, meets 2d Thursday, Jan., May and Sept.—Pres., W. H. Dillon, Zanesville; V. Pres., F. F. Walker and A. W. Boyd; Rec. Sec., J. A. Honabarger; Cor. Sec., B. M. Beatty, Zanesville; Treas., H. J. Boyd.
- 21 EASTERN OHIO DENTAL SOCIETY, meets 1st Thursday, May and Oct.—Pres., H. D. Smith, Cadiz; V. Pres., C. S. Starkweather and L. B. Peterson; Rec. Sec., J. K. Hunter; Cor. Sec., J. G. Parr, Martins Ferry; Treas., W. J. Nesbitt.
- 22 BUTLER COUNTY DENTAL SOCIETY, meets 3d Friday, each month.—Pres., P. A. Krucker, Hamilton, V. Pres., E. E. Meisterhaus; Sec.-Treas., F. T. Craven, Hamilton.
- 23 MIAMI VALLEY DENTAL SOCIETY, meets last Monday, Pres., J. W. Siegfried, Third St. Arcade, Dayton; V. Pres., H. C. Huffman; Rec. Sec., F. W. Cockerill; Cor. Sec., G. W. Riche, 622 N. Main St., Dayton; Treas., J. R. Arthur.
- 24 REHWINKEL DENTAL SOCIETY, meets 3d Thursday, Pres., M. G. Phillips, Chillicothe; V. Pres., A. M. Bush and O. A. Thompson; Sec., F. D. Wollard, Washington C. H.; Treas., W. E. Robinson, Washington C. H.
- 25 HOCKING VALLEY DENTAL SOCIETY, meets 1st Monday.—Pres., J. J. Stuke; V. Pres'ts., C. F. Ackers and W. M. Scott; Sec., W. E. Shadrach, Lancaster; Treas., S. D. Vosper.
- 26 SOUTHEASTERN OHIO DENTAL SOCIETY, no report.
- 27 CINCINNATI DENTAL SOCIETY, meets 3d Friday, Pres., S. J. Rauh, Cincinnati; V. Pres., R. W. Taylor; Rec. Sec., Wilson Foster; Cor. Sec., Paul Cassidy, 807 Livingston Bldg., Cincinnati; Treas., J. D. Gordon.
- 28 SOUTHERN OHIO DENTAL SOCIETY, meets, 3d Monday, May and Oct.—Pres., O. D. Donaldson, Portsmouth; V. Pres., F. C. Goodwin; Sec., E. C. Jackson, Portsmouth; Treas., E. O. Buchanan.
- 29 OHIO VALLEY DENTAL SOCIETY, meets 2d Wednesday, Apr and Oct.—Pres., M. D. Hartinger, Pomeroy; V. Pres., R. B. Church; Sec., C. S. Shumaker, Pomeroy; Treas., J. B. Hodge, Middleport.



# NEWS and OPINIONS

CONDUCTED BY G. E. HARTER

## LACONIGRAMS

The German people seem to have been laboring under the mistaken notion that all they needed to do was to quit fighting in order to be taken into the motherly arms of the allies and cuddled like a spoiled and mistaken child. They found war a pretty grim business before they reached their finish; and they are finding peace to mean something more than a bath, a shave, and treatment with an atomizer charged with attar of roses.

"They who dance must pay the fiddler," and Germany is likely to find the price rather high.

Dr. Percy R. Howe, Boston, has rendered a distinct service to the profession and has added to genuine dental literature by the writing of his article on "The Treatment of Root Canals" that appears in this issue. To me it was most refreshing in its sane and safe common sense, especially when compared with some of the wild-eyed theories recently expounded. Every dentist should read it; then read it again; then study it; then practice accordingly. To me it seems that there has been more arrant nonsense written and taught concerning the treatment of root canals than upon any other subject in the dental field.

Bully business: Under a recently inacted New York State law, all persons must be able to read, write and speak the English language by 1924 or forfeit their voting privilege. This law should be adopted by every state in the Union, or be made a federal statute. There has been entirely too much "tolerance" in this land of the free.

Dr. G. A. Pollard, Vancouver, B. C., announces that he has returned from the Front, and has opened an office at 436 Hastings Street, west.

Boston reports highest death rate for 1918, in city's history.

It is stated that many of the American dentists are arranging to remain abroad. Few American physicians will remain, and practically no soldiers; but the dentists have found an opportunity of succeeding in their profession beyond anything that they could hope for in this country. However, the crowned heads of Europe, and other prominent parties, are not likely to make any of the dentists of the future as famous as the kaiser made his American dentist—or as notorious.

A thorough dental examination of every pupil in Brooklyn, N. Y., Girls' High School was made recently by Dr. John D. Hyatt, pres-

ident of the Second District Dental Association, assisted by sixteen dentists. Convinced that defective teeth and adenoids are causes of backwardness and delinquency, the examination was ordered by Caroline M. Wollaston, chairman of the physical training department. Only 10 per cent. of the girls examined were found to have perfect teeth. In one case a girl was found to have but one sound tooth in her head. In some instances as many as sixteen cavities were found in one set of teeth. One student who has given much trouble was found to have very bad teeth. The parents in each case are to be notified, and it is hoped that they will make efforts to correct the trouble.

## The Harrison Act

As amended by the new War Revenue Act, will be mailed postpaid to any druggist, physician, dentist or veterinarian who will send a postal request therefor to "Mailing Department, Parke, Davis & Co., Detroit, Mich." Please observe directions strictly.

## BUREAU OF INTERNAL REVENUE

**Income Tax Returns Must be Filed on or Before March 15. Heavy Penalties for Failure.**

Work on the collection of \$6,000,000,000 has been begun by the Bureau of Internal Revenue. This is the estimated yield of the new revenue bill. The income tax provisions of the act reach the pocketbook of every single person in the United States whose net income for 1918 was \$1,000, or more, and of every married person whose net income was \$2,000 or more. Persons whose net income equalled or exceeded these amounts, according to their marital status, must file a return of income with the collector of internal revenue for the district in which they live on or before March 15.

Here is what will happen to them if they don't; for failure to file a return on time, a fine of not more than \$1,000 and an additional assessment of 25 per cent. of the amount of tax due.

For "willfully refusing" to make a return on time, a fine not exceeding \$10,000, or not exceeding one year's imprisonment, or both.

For making a false or fraudulent return, a fine of not more than \$10,000, or imprisonment for not more than one year, or both, together with an additional assessment of 50 per cent. of the amount of tax evaded.

For failure to pay the tax on time, a fine of not more than \$1,000 and an additional assessment of 5 per cent. of the amount of tax unpaid,

## THE DENTAL SUMMARY

plus 1 per cent. interest for each full month during which it remains unpaid.

In addition to the \$1,000 and \$2,000 personal exemptions, taxpayers are allowed an exemption of \$200 for each person dependent upon them for chief support if such person is under eighteen years of age and incapable of self-support. Under the 1917 act, this exemption was allowed only for each dependent "child." The head of a family—one who supports one or more persons closely connected with him by blood relationship, relationship by marriage, or by adoption—is entitled to all exemptions allowed a married person.

The normal rate of tax under the new act is 6 per cent. of the first \$4,000 of net income above exemptions, and 12 per cent. of the net income in excess of \$4,000. Incomes in excess of \$5,000 are subject also to a surtax ranging from 1 per cent. of the amount of the net income between \$5,000 and \$6,000 to 65 per cent. of the net income above \$1,000,000.

Payment of the tax may be made in full at

the time of filing return or in four installments, on or before March 15, on or before June 15, on or before September 15, and on or before December 15.

Revenue officers will visit every county in the United States to aid taxpayers in making out their returns. The date of their arrival and the location of their offices may be ascertained by inquiring at offices of collectors of internal revenue, postoffices and banks. Failure to see these officers, however, does not relieve the taxpayer of his obligation to file his return and pay his tax within the time specified by law. In this case taxpayer must seek the Government, not the Government the taxpayer.

### A Dental Bolshevik Sentenced

Brooklyn, N. Y., Jan. 22.—What is believed by Federal officers will be an effective gag was placed on Bolshevism in Brooklyn today, when Federal Judge Edwin Louis Garvin sentenced Morris Zucker, Brownsville, Bolshevik dentist, to fifteen years' imprisonment of each of four

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CLEVELAND, OHIO

In the treatment of suppurative lesions of the gums, wherein stimulating restorative antiseptic influence is indicated, prescribe

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For cleansing and purifying the oral cavity before and after operations on the teeth, a cooling, refreshing spray, wash or gargle is provided by

# LISTERINE

As an adjunct to the dental toilet of your patients; as a prophylactic tooth and mouth wash, for daily use, there is nothing superior to

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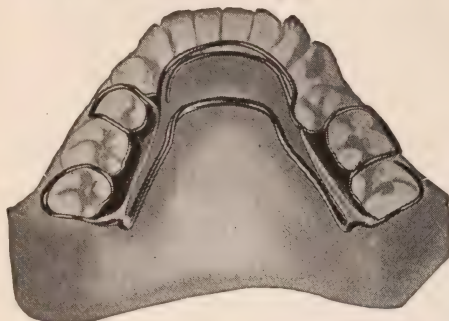
Booklet "The Teeth and Their Care" emphasizes the importance of frequent consultation with the dentist, and contains useful information for patients; 200 copies, imprinted with professional card, furnished gratuitously.

Dental Examination Blank combining chart and Notice to Parents, suitable for dentists doing clinical work among school children, also supplied without cost. Dentist's name and address printed thereon.

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Twenty-first and Locust Streets      St. Louis, Mo., U. S. A.



## Jackson's Orthodontic Appliances



Send plaster models of your cases. Appliances designed to correct any irregularity. Mailed with full instructions when requested.

Price \$7.00 each

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## Known Value Paid for Scrap Metal

We do not guess the values of your scrap gold, platinum, amalgam, sweepings, etc. Our experts analyze it, test it, assay it, and ascertain by scientific methods, its true and exact value. And we pay you for it on that basis.

Our laboratory tests enable us to pay the real value—the highest possible prices for all such material. Our value determining methods are scientifically exacting and reliable.

Mail us today your filings, cuttings, bridges, false teeth (with or without gold fillings), crowns, platinum sheet or wire, scrap gold, bench sweepings, etc.

We will send you the full value of it in spot cash the same day as we receive it, and will hold your material ten days subject to your acceptance of our remittance.

We also buy old jewelry, watches, silver plate, magnetic points,—anything containing gold, silver or platinum or jewels.

Dun and Bradstreet references

**Ohio Smelting & Refining Company**  
913 Park Building Cleveland, Ohio

counts to the indictment on which he was convicted of violating the Espionage Act by a "Red" speech delivered Thanksgiving night at Brownsville Labor Lyceum. The sentence will be served concurrently at the Federal Penitentiary, at Baltimore, Md.

Judge Garvin made the sentence even more drastic by refusing to grant bail pending an appeal.

In sentencing Zucker, the Court said:

"Morris Zucker, you have been convicted by the verdict of the jury of a violation of one of the laws of the United States, which today stands as one of paramount importance. The conviction came at the end of a trial during which you were represented by able, alert, devoted and conscientious counsel, and your rights were fully respected.

"Today there is nothing more important to the country than that its citizens be loyal, and disloyalty to the United States will not be tolerated. The court would be glad to believe that what you said was said innocently. But it developed during the trial that on the evening the words were uttered you were warned by the police and that, despite that warning, you made the address which has resulted in your conviction on this charge. It may be that the innocent will suffer far more than the guilty for they usually do, but the Court would be remiss in its duty if it failed at this time to take such steps as will prevent your repeating the offense for some time to come, and will indicate to the community that any man who conducts himself in this way should expect to be deprived of his liberty for a substantial time."

Those who in America, mistakenly confuse liberty and license should be allowed ample opportunity to "think it over" in the solitude of federal prisons. I have no sympathy with those who, however mistakenly, seek to bring discredit upon this country, for which so many thousands of our best and bravest have just given their lives.

### An Honor Well Deserved

Nicholas Murray Butler, president of Columbia University, was the principal speaker at a dinner of the Dentists Society, held at the Hotel Bossert, New York, January 19, in honor of Dr. Frank T. Van Woert, referring to him as a scholar of the highest zeal, and a man of most noble character.

Other speakers were: Dr. Augustus Downing, Secretary of State Board of Regents, and Col. William H. G. Logan, U. S. A. The former spoke on the attitude of the Board of Regents toward Dental Education; and the latter on the Dental Profession During the War.

### St. Louis Free Clinic

St. Louis, Jan. 19.—The importance to a child of sound teeth and a clean mouth and the activity of the Department of Hygiene of the Board of Education were explained yesterday by Dr. James L. Stewart, director, reviewing the first years' operations of the George A. Meyer free dental clinic at Central High School,

## THE DENTAL SUMMARY

under auspices of the board and the St. Louis Dental Society.

Dr. Stewart declared that the School Board would do all it could to institute the free clinic in each quarter of the city. The board's powers in this direction do not extend beyond what it is doing for the limited clinic at Central High, where it provides quarters, light, heat, an attendant nurse and other facilities, not including dental operatives.

"What really should be done," Dr. Stewart explained, "is for the city to establish and maintain these clinics as separate institutions, under the Health Department. In the absence of such municipal support they are possible only through private philanthropy in co-operation with the dental society.

"Observation has convinced me that fully 90 per cent. of the children attending the public schools are in need of dental attention. As to the percentage of these whose parents or guardians are unable to have this attention given by the family dentists, I will not say, but it is much beyond the capacity of the free clinics.

"With limited operations during the one year of its existence, 520 cases were treated.

The Hygiene Department is not content merely to search out the decaying teeth among pupils and have them treated. We are informing the children, and through them the parents, that the mouth is the vestibule through which most diseases enter the body, and that the root of this menace is the teeth.

"We are making missionaries of the children who are treated at the clinic to overcome the almost universal dread of the dentist's chair."

### Ohio—North Central

Sandusky, Jan. 16.—R. E. Woleslagel, Bellevue, was elected president of the North Central Ohio Dental Society at the quarterly meeting held Wednesday afternoon at the Sunyendeand Club. Reports from various officers and committees showed the society to have enjoyed a prosperous year. C. D. Peck, as president last year, injected considerable enthusiasm into the organization.

Officers selected besides the president were: A. G. Thatcher, Fremont, vice-president; H. S. Rogers, Sandusky, corresponding secretary; L. H. McDonald, Norwalk, recording secretary; E. S. Braithwaite, Willard, treasurer; J. K. Douglas, Sandusky, trustee, and George D. Smith, Fremont, members of the executive committee for three years.

### New York State

Syracuse, Jan. 21.—Preliminary arrangements are being made for the Fifty-first Annual Meeting of the Dental Society of the State of New York, which is to be held June 12th, 13th and 14th. George B. Beach of this city is president of the society and the committee on arrangements for the meeting consists of A. R. Cook and C. A. Bradshaw, of Syracuse, and E. A. Smith, of Rome.

### Michigan—Detroit

Detroit, Jan. 17.—Officers for the coming year were elected at the monthly meeting of the Detroit Dental Society in the Board of Commerce Building, Thursday evening. G. W. King was the choice for president, with Lloyd Rogers as vice-president. Charles Lane is the new secretary and E. L. Giffen, treasurer.

### Ohio—Central

Marion, Feb. 5.—These officers were elected here today at the annual meeting of the Central Ohio Dental Association: President, O. M. Young, Marion; vice-presidents, Frank Burger, Kenton, and F. C. Leonard, Brucyrus; recording secretary, D. G. Welsh, Ashley; corresponding secretary, Frank R. Mann, Marion; treasurer, F. C. McGaughy, Galion.

### Ohio—Western

Greenville, Feb. 7.—A meeting of the Western Ohio Dental Association was held in this city yesterday.

A two-hour business session was held in the common pleas court room in the morning, after which the dentists enjoyed a four-course dinner at the Oak Restaurant.

The afternoon session convened at two o'clock, at which time the society was favored with two excellent clinics by Drs. Davis, of Troy, and Sheridan, of Piqua, on "Plate and Crown Work."

### New Combination Course for U. of P. College and Dental School

Students in dentistry may now get two degrees in seven years.

In accordance with a statement issued by Dean Quinn today, February 10, academic and dental students at the University of Pennsylvania may combine their courses so as to receive the degree of Bachelor of Arts and Doctor of Dental Surgery in seven years instead of eight. This joint action of the college and dental faculties was arrived at and approved by the Provost and Trustees. According to this arrangement, a student in the course in Arts and Science may in his senior year, on the recommendation of the Dean of the college, register also as a regular student in the first year class in the School of Dentistry. Students wishing to avail themselves of this privilege are required to complete fifty-eight units of purely college work, including three units in physical education. The other nine units required for graduation will be credited to them from the studies of the first year class in dentistry, including one unit in physical education. The degree of Bachelor of Arts is awarded by the college at the satisfactory completion of the first year in the dental school. This combination is made possible by the fact that in the first year in the dental school students take work in chemistry, in biology and in anatomy of such a general nature that it may be counted properly towards the securing of a Bachelor's degree in the college. A similar combination



has existed for some years between the college and the school of medicine; while the law school now requires a Bachelor's degree for admission. The combination is in accord with the movement now gaining strength throughout the country which emphasizes the necessity of a broad cultural foundation for those pursuing professional work of any kind. It also recognizes the real necessity for economy in time of preparation for those intending to practice the profession of dentistry. A student normally enters the college at the age of eighteen and by taking this combination he will graduate from the dental school at the age of twenty-five. —Office of the Recorder, University of Pennsylvania, Feb. 10, 1919.

## A Suggestion from the Front

Permit me to refer to the January SUMMARY. Several articles therein interested me personally because of my convictions, that perhaps the greatest aim toward which the practice of dentistry may be developed is that of a systematic effort to have all children's teeth regularly attended to *conscientiously* on the part of both parent and the profession, and thus in time almost eliminate reparative (?) dentistry as it is practiced today, with its many disputed and confusing problems.

From an humanitarian standpoint—that would be my line of specialization—with a systematized follow-up method to insure its financial success—were I to take up the practice of dentistry—C.

## DEATHS

At Butler, Pa. January 11, Dr. John M. Leighner, (retired) aged 73.

At Washington, D.C., January 4, Dr. William E. Dieffenderfer.

At Seattle, Wash., January 12, of diabetes, Dr. Charles Patrick Brown, aged 62.

In France, December 29, of pneumonia, Dr. Nicholas Milton Stark, of Brooklyn, N. Y.

At Brooklyn, N. Y., January 29, Dr. Leon Ellis Boyd, aged 43, formerly of Greenfield, Ohio.

At New York City, January 26, Dr. Clarence L. Hackett, aged 43.

**Classified** Advertisements under this heading, \$2.00 each for 60 words or less; additional space 2 cents per word, single insertion; three insertions or more, special rate on application.

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**A**N INVITATION to every member of the NATIONAL DENTAL ASSOCIATION to attend the Twenty-third Annual Session of the Association October 20, 21, 22, 23, 24, 1919, in New Orleans, La. "Dentistry must play its part in the era of reconstruction."

C. V. VIGNES, President

JOSEPH P. WAHL,

Chairman Local Committee

# REGULAR CONTRIBUTIONS

## THE DENTAL SUMMARY THE MAGAZINE THAT HELPS

Vol. XXXIX

April, 1919

No. 4

### PULP CONSERVATION IN CROWN AND BRIDGE WORK\*

BY D. A. HOUSE, D.D.S., INDIANAPOLIS, IND.

**I**N PRESENTING this paper before this body of practitioners of the art of dentistry, it would be most presumptuous of me even to attempt anything in the way of method or technic that can be called new. So while the subject under consideration is not new, there are involved certain principles which, though not new, are always worth considering.

With the present national propaganda for hygienic and preventive ideals; with the data obtained by the most scientific investigation, with the necessity for the most intensive operative and therapeutic procedure, isn't it possible, by some manner or method, by some accepted standard of principle, not to correct the mistakes which are attributed to the dental profession, but to prevent or at least reduce to a minimum the possibility of their occurrence?

We are told, and I believe it is true, that therapeutic and surgical action often are necessary because of the results of our work which we intended should produce physiologic conditions. Why do we obtain that which is diametrically opposite from what we felt we had a right to expect? Why so often when we sow wind do we reap the whirlwind?

When we remove the pulp of a tooth and fill the root canal, with the idea in mind that we are preserving the masticatory functions of that tooth so that the owner may digest and assimilate his food which was masticated by that tooth so he could live a long, happy, useful life, why does he sometimes come back to us, still young in life perhaps, leaning on a cane or crutch, or moving slowly to avoid undue heart action, or perhaps can't raise his hand to comb his hair; why are the results different from what one has a right to expect? After so much energy and care have we not the right to expect a more conscience-easing product of our labor than that?

The answer as I see it is, Yes and No. Let me insist at this time that the matter of "personal equation" enters largely into this subject, as

\*Read before the Ohio State Dental Society, Dec., 1918.



it certainly does in the profession of dentistry as a whole. We must recognize the fact that native talent is a large factor in obtaining results along a given line. One man by development of certain tendencies can produce a certain amount of work, with more ease and more precision in much less time than another man who went through the same process of development under exactly similar environment.

Unfortunately we are not all endowed with the same degree of acuteness, temperament, ingenuity or moldability. Has anyone the temerity to say that it is at all possible that the dental profession as a whole, with a perfect understanding of the minute detail of the technic, and conscientiously exerting every effort to master that technic, universally can obtain like results?

Is it possible for every practitioner to obtain the results of Pesso or Chayes in removable bridge construction, even though the technic and principles are understood in minute detail? Is it possible for every one entitled to the degree of Doctor of Dental Surgery, even after years of experience, to master the principles of root-canal technic, or the art of dental prosthesis? We all know the sequelæ of a great percentage of our root-canal work. We know by scientific research and clinical data, that the harm caused by the results of imperfect technic in root-canal work far outweighs the efficiency produced by our efforts. Notwithstanding the fact that your beloved, our beloved Callahan, by his ceaseless, untiring efforts has given us a technic for root-canal work, which is unsurpassed or unequalled by any other author of standards, we as a profession although improved and will continue to improve, are not able to meet the requirements the science of dentistry has the right to expect of us.

We all know how rare the occasion that we see cases of crown and bridge restoration where pathologic conditions do not exist, that are primarily the results of said restorations. And do we not always, especially in fixed bridge work, find conditions entirely antagonistic to what we are led to believe are ideals in prophylaxis?

There are certain facts existing which we dare not ignore. Facts, after passing through the empirical stage, became scientific. We know that in the anatomical form of a tooth that each and every marking, groove and ridge has a purpose. These markings once destroyed, unless they are reproduced in the restoration, the functions of the restored tooth are not perfect.

We know in order to produce certain results and retain certain conditions we must observe certain natural laws and scientific principles. Ignore them, and we suffer defeat because of the fact that failing to create a condition of preventive nature we are indeed responsible for injurious results.

Dr. Forrest H. Orton, of the University of Minnesota, says: "Standardization is the watchword of the day. A standard which will serve

as a basis for comparison or judgment. A certain excellence. A scientific standard which shall be consistent with the prophylactic requirements of today as well as efficient from the viewpoint of art and usefulness."

I wish to say that Dr. Orton has done and is doing a wonderful work in elevating the standard of crown and bridge work, and if its standardization means anything he is entitled to a great part of the honor for its success.

Prosthesis is rapidly approaching a standardization through the efforts of such untiringly unselfish men as Drs. Wilson, Hall, M. M. House and others. Orthodontia has developed until it is a series of facts and undeniable laws.

Cavity preparation was thoroughly and scientifically standardized by Dr. Black, the fundamental principles of which are today unchanged.

Let us hope then that the time is near when the standardization of crown and bridge work will be a reality. Not a standard beyond the reach of but few possessed of enviable ingenuity, but as possible for him, who, by certain laws, has been classified amongst the average.

Cardinal elements entering into all phases of dentistry, especially those chiefly mechanical, are simplicity and accuracy. To me in practice and as a teacher of students they are watch words.

If efficiency does not suffer because of simplicity, the more attractive to the average mind the results obtained. Intricate, delicate, and sensitive detail in technic creates a fear of failure in the minds of many of us. Intricate, delicate procedure requires highly-developed genius. A delicate, sensitive appliance is subject to distortion out of alignment and uselessness.

Accuracy is essential at all times and under all circumstances. It is obtained by specific rules and applied technic. Luck and guess-work have no control over it whatever. Generally "the longest way round is the shortest way to get it."

Accuracy is obtained by ease of access and adaptability. It may require a technic which is developed step by step, but if accompanied by simplicity the results obtained always are satisfactory.

You all know how recently pulp-devitalization in crown and bridge work was advised by many of the best teachers in the dental profession, because of the physical impossibility of the proper preparation of a vital tooth for the adjustment of a bridge support. It was advised by many always to devitalize the pulp, thereby depriving the tooth of its sensibility and enabling the operator to so form the tooth to permit a crown adjustment that would compare with all the physiological conditions of the natural tooth and its surroundings.

Radiography and clinical experience have taught us that pulp removal and subsequent root-canal filling have been one grand continuous movie play of blunders.



Our best dental and medical thinkers are charging us with the authorship of conditions that produce an endless amount of pain, distress and unhappiness, because of these shortcomings in connection with pulp and pulp-canal treatment.

We are taught that the pulp is a developmental organ, much in evidence while the tooth in its young life is struggling to attain its full manhood and become a full-grown, well-developed member of the human anatomy.

If the pulp is fortunate enough to escape the ravages of its enemies beyond the age of complete tooth development, does nature set about by some means to eradicate it after it has served its time in the developing business? On the contrary she will place a solid wall to act as a shield for that pulp against external irritations, and in her zealous effort to protect it she sometimes throws trowels-full of her masonry into the pulp itself, which we recognize as pulp-stones or pulp-nodules.

If nature then in all her wisdom deems it advisable to entrench the pulp behind a wall for protection, does it not seem reasonable to believe that the pulp is intended for further use, and is it not up to the dental profession as guardians of the mouth to do all in its power, not only to protect the pulp in distress but refrain from its useless, ruthless destruction?

We are all led to believe that because of the excessive grinding of the periphery of a tooth and subsequent encasement with a crown with its sealing medium of cement, that that tooth will not only be most uncomfortable from the external irritations, but the pulp is certain to succumb, or a pathologic condition arise, necessitating its removal to relieve the patient and place the tooth in a useful condition. Therefore, those conditions arising so often, is it not the better part of wisdom to relieve that tooth of the pulp in the beginning and avoid all such chances?

If that were all that entered into the situation I would say "yes," without hesitation. In all my experience both ocular and clinical, I have yet to see even a few teeth, the death of the pulps of which positively could be traced to excessive grinding and subsequent crowning.

I acknowledge the fact that we frequently have a sensitiveness or discomfort from thermal changes, just as we do from the filling of sensitive cavities from caries; and in both cases nature comes to our rescue and helps us out of the difficulty generally. Give nature a chance and she will do wonders and help us out of many a perplexing situation.

I note with pleasure that some of the most enthusiastic pulp extirpaters have awakened to the fact that more serious trouble in a comparatively great number of cases can develop from pulp removal, than in leaving the pulp intact and allowing nature to assert herself.

I also note with some sorrow that those who think it is the acme of bad practice to leave the pulp in a tooth for a bridge abutment are men

who do not hesitate to knock the breath out of a pulp with some form of anesthesia, rendering it senseless so it can't halloo, and while in this state of coma proceed to grind the tooth beyond recognition, already injured by caries, approach the pulp to the point of stabbing, and insert an MOD or other large inlay and not a word is said about the possible death of the pulp or pulpitis.

The proposition which confronts us today and which always has been uppermost in my mind is the question of conservation. Allied with the subject in which we here are interested, is the conservation of the dental pulp in crown and bridge construction. *I believe we should use every means, exert every power, to save pulps.*

I believe we should take the chances though they be at odds in trying to save the pulp rather than creating a condition in which the odds are greatly against us for future trouble after pulp removal.

You may say that your root-canal technic is so perfect that you know that your root canal is perfectly filled. Are you sure of it? You may say that radiographic readings verify your work to be perfect. Still are you sure of it?

I refer you to our late Dr. Callahan, who I believe was our best root-canal technician, where in giving his results in canal filling, he showed lantern slides of the filling material after the dissolution of the tooth, and it clearly showed a network of canals in all directions.

I refer you to the fact that the smallest amount of unfilled apical end of a root canal can cause nephritis, arthritis, endocarditis, etc. At least learned men of the science of pathology, bacteriology, microscopy, etc., tell us it is true.

Does your radiograph show positively that these apices and ramifications are perfectly filled, that every foramen opening to the external surface of that root is closed? If you are sure of it you are safe. You are conscientiously permitted to remove a pulp whenever and wherever you please.

My object in presenting this subject today is to show how it is possible, where a fixed bridge is indicated, to do so without pulp devitalization, without impingement on the soft tissue or destroying the gingival contour of the tooth, leaving conditions for prophylactic measures practically unimpaired, and at the same time respecting the comfort of the patient and sanitary features.

One thing I mention with regret and that is: It always has been and always will be necessary to do more or less grinding of the natural tooth in fixed bridge construction. It is a part of the operation, especially if the tooth to be so treated is one in perfect condition, that I do with a feeling of remorse; that is my one regret; but since we have cases where fixed bridge work is indicated the inevitable must be done.

I wish to repeat that accuracy of adaptation is one of the essential elements for success. Accuracy of adaptation with sufficient material



for rigidity always must be in mind. Stretching or yielding of supports has been the cause of many an excellent bridge being a failure.

Because of the form of tooth preparation, accessibility is a predominating feature.

Instead of producing a shoulder around the periphery of the tooth which is an extremely difficult procedure, the circumference is ground to a bevel producing an angle, to which point the band of the crown extends, leaving the gingival contour of the enamel untouched and uncovered. The band at that point being finished to a knife edge, leaving no margin for the lodgment of food debris, and not extending to the gingival border, causes no irritation to the soft tissue, nor interferes with prophylactic procedure.

Because of gingival exposure, the question in the minds of some may be, "Does this not invite caries?" In answer permit me to say because of the exposure of the gingival portion of the tooth, and because of no interference in the use of the brush or prophylactic measures, it is no more liable to caries than if there were no crown on the tooth.

With me this is no experiment. Having used this form of bridge support since 1906, the results have been most gratifying.

In cases where caries has made its appearance in the tooth to be crowned, the procedure is to make the restoration in the usual manner, and proceed with the tooth preparation for the crown in a manner as though caries had not existed.

Where I have the greatest satisfaction is in cases where the teeth to be used for abutments have tilted or moved because of the long loss of the teeth between. In extreme cases of that character it is practically impossible to properly prepare and adjust a crown even after devitalization. By this form of technic it requires the minimum amount of grinding, the adjustment is visible and accuracy is simplified.

I can recommend this form of crown technic in any case where a fixed bridge is indicated and where the use of gold is not objectionable for esthetic reasons.

I have in a few instances used it on lower cuspids, following the same principles of technic. Briefly summarizing, in this form of technic: when a case is completed we have a restoration that for efficiency, for service is as good as it is possible to obtain. The least possible amount of tooth structure has been destroyed, and that which has been destroyed has been accurately reproduced. The soft tissue is not in the least disturbed. Prophylaxis scarcely has been interfered with; which means that it is as sanitary as it is possible to make and adjust a crown, and last but as important as any feature in the operation, the pulp is undisturbed, no reason for causing focal infection, and as little reason for pulp disturbance, as any operation where restoring lost tooth is involved. The physiological conditions of the tooth and its surroundings are practically unchanged.

## SANITARY DUMMY CONSTRUCTION

I wish to say only a few words concerning this part of my subject.

I believe all fixed bridge work is unsanitary. Some forms of bridge construction is much more unsanitary than others.

There are many places where, because of the difficulty of access, that stagnant saliva, food debris, mucus, etc., can not be swept away by friction of food or brush. Some of these places are not only cesspools, but often are annoying to the patient because of the unnatural, uncomfortable feeling to the tongue. I use this form of dummy construction extensively in upper restorations. The only precautionary feature, I have to suggest is that it only should be used when resorption of the process has been complete.

Any further reference will be made by the use of the charts.

In conclusion I wish to say the first record I have in the use of this form of technic for a bridge attachment was in 1906. I have used it extensively in recent years with most gratifying success. The vitality of the pulp is not endangered. The physiological functions of the soft tissues are not interfered with, pathologic conditions are not created and the comfort of the patient is maintained.

## TECHNIC FOR DOUBLE BANDED HALF-CROWN

First let me call your attention to some forms of natural teeth, *Figs. 1 to 4*. These forms may seem exaggerated but I can show natural teeth at my clinic that will prove they are not so. These contours and markings all mean something; destroy them and they should be reproduced.

Dr. Orton claims that the contour of a tooth is formed entirely by enamel, and in his technic he is careful to reproduce that contour, and to reproduce the gingival contour correctly it can best be accomplished by two bands. This is absolutely true.

Since these contours and markings are of nature's design and they are difficult to improve, I consider it wise not to disturb any part of them that can be avoided. Therefore this simple form of technic, requiring the minimum amount of tooth destruction, the restoration of which is accomplished by a double-banded crown.

To fit a crown perfectly beneath the gingival border it is absolutely necessary to remove all the enamel, an operation difficult for most operators. In the technic here given the periphery of the tooth generally is ground just below the greatest diameter bucco-lingually (*Figs. 5 and 6*), which never extends to the gum line. A short or leaning tooth may be an exception.

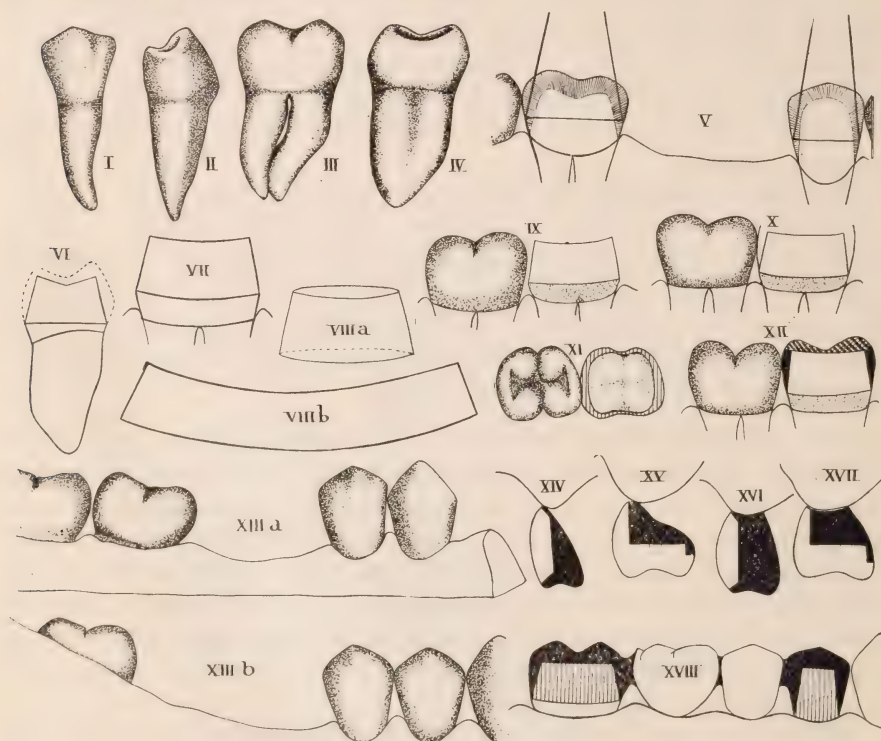
The tooth is ground as shown in *Fig. 7*, care being taken not to disturb the contact surface of the approximating tooth. A modelling compound impression is taken, and cast poured.

A primary band of pure gold is fitted. A pattern for the band can be made by placing No. 60 tinfoil around the prepared tooth, which will



be in the form of an arc of a circle. (*Fig. 8.*) The same shaped metal also is made by passing a straight strip of 32-gauge gold through a pair of rolls one side set closer than the other.

The primary band accurately is fitted to the cast, the cervical end extending just to the angle formed by grinding the occlusal end just to the occlusal surface of the tooth. This band is soldered with a minimum



amount of 22k plate gold. This band is now fitted to the tooth in the mouth, pressing well to place and burnishing to the entire circumference.

A plaster of Paris impression is taken with the band in position. Before pouring cast, a small amount of wax is melted on the inner surface so it can be warmed and removed without distortion.

The cast made, we have the primary band in correct relation to the approximating tooth and ready for the secondary band. (*Fig. 9.*) A piece of 30-gauge 22k gold of suitable length and width is contoured and fitted over the primary band, contouring to restore the original form of the tooth as well as the contact point. (*Fig. 10.*) After being adjusted the wax inside the primary band is warmed and both bands removed, and the space between them soldered with 22k solder. (*Fig. 11.*) The cervical end of the band is filed to a knife edge, the completed band is again placed on the tooth in the mouth and firmly driven to place. The

occlusal surface of tooth and end of band are now reduced to allow for a heavy occlusal surface on the crown.

Being sufficiently ground, and the edge of band and occlusal surface of tooth being flush, the band is removed, a flat piece of 34-gauge pure gold soldered with 20k solder is attached to the occlusal end of band. It is replaced on the tooth, firmly driven to place by applying the force around the edge. The pure gold is burnished to any uneven surfaces of the tooth. Inlay wax is melted on the occlusal surface and while still soft the patient closing the teeth will give the occlusion. It is removed, carved, invested and cast. (*Fig. 12.*) Should the casting not unite perfectly with the band it is completed with soldering.

Any form of technic may be used to obtain the occlusal surface.

Great care should be taken to prevent any solder from flowing inside the band, as the smallest amount will interfere with the crown going to place.

Proceed in the usual manner for completing the bridge. This technic is ideal where the teeth converge. (*Fig. 13.*)

#### TECHNIC FOR SANITARY BRIDGE DUMMY

I contend that no fixed bridge is sanitary. Some fixed bridges are more sanitary than others. There always will be cases where fixed bridges are indicated. So the more sanitary we can make them the more satisfactory they are.

This form of technic is most suitable in the upper jaw where resorption has been complete, preferable in the bicuspid and first molar region.

Any form of tooth can be used, Steele, Goslee, pin facing, etc.

The object is to obtain a small saddle at the cervical contact, to rest lightly on the soft tissue and is easiest to obtain by the casting process. The diameter of the contact area should be small in all directions, to insure large approximal spaces. The surface in contact with the gum should fit accurately and be smoothly finished.

Instead of a condition as represented by *Figs. 14 and 15* we have conditions like *Figs. 16 and 17*, which are more accessible to prophylactic measures, and made more comfortable to the patient.

*Fig. 18* represents a completed bridge; the principal features of which are the exaggerated inter-proximal spaces; preservation of the embrasures; and perfectly-soldered union of the dummies to insure smooth, self-cleansing spaces.

With the diameter of the cervical contact thus reduced to a minimum, there is no place for the lodgment of food debris, that is not as accessible, and easily removed as from the natural teeth.

This same technic is applicable to anterior restorations as well as posterior, and I have had very satisfactory results. One precaution however, is necessary, and that is not to make the inter-proximal spaces too large, because of the danger of the emission of air in speaking, which



may cause a lisping or whistling sound. The diameter of the cervical contact mesio-distally should not be reduced to such a marked degree.

This technic is adaptable to the ordinary bridge facing, by casting the lingual after being adjusted to the model and carved. I always cast so the facing can be removed. It is then cemented to place.

This technic is especially adaptable to the Steele removable facing. The tooth with its backing is ground and adjusted to the model; wax is added to the lingual surface to form the approximate shape of the natural tooth producing a contact with the alveolar ridge. The casting is done against the backing.

From clinical observation extending over a period of years, and from comments by patients using this form of bridge construction, concerning the comfort and convenience in applying sanitary measures, I believe it to be the most satisfactory form of bridge construction, where a fixed bridge is indicated.

704 Hume-Mansur Bldg.

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### COLOR OF THE TEETH\*

BY F. H. ORTON, D.D.S., SAINT PAUL, MINN.

PROFESSOR OF CROWN AND BRIDGE WORK, COLLEGE OF DENTISTRY, UNIVERSITY OF MINNESOTA

**A**LTHOUGH the mechanical part of crown and bridge work has been justly commended, yet it cannot be denied that something more than excellence of craftsmanship is implied in the many hyperbolic descriptions extolling the fineness of the work and its truth to nature. What is really implied in these descriptions is this: That crown and bridge work has passed beyond mere science; in fact, that it is an art. Do not let it be inferred that I intend to belittle in the slightest degree the mechanical ingenuity which has found expression in the evolution of the artificial crown; what I have to say has been suggested by the claims of dentists themselves.

If crown and bridge work already has a place among the arts, it is altogether fair to ask, what is its technic? What are its standards? I have only to phrase these questions, and they answer themselves immediately. I do not mean to suggest here that there are not favored individuals in the profession who are endowed with some special love for art and a perception of its more palpable beauties, who pick up in the course of time a great deal of empirical knowledge, working their way back to first principles through studies and reflections that should have been offered as a preparatory course for their work. My point is this: Whereas there is a technic, a code of procedure for the mechanical part of the work, which serves as a guide to the student of dentistry, there is no such guide for the higher aspect of the work—that aspect which gives us the right to consider the replacing of the natural crown by the arti-

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\*Read before the Indiana State Dental Society, 1918.

ficial one as among the fine arts; all this is left entirely to the individual. It would be idle to deny that individuals have accomplished nothing; often, indeed, they have accomplished a great deal, but only as *individuals*. Each one who obtains any results in this field laboriously works out for himself his own theory and practice; and when he passes away, his art perishes with him. I need not insist on the loss of effort caused by this method of working, nor upon what the profession as a whole loses by one person not being able to begin where another leaves off. It is as if all the knowledge that the first generation of men acquired should disappear with them, as if the new generation must begin again at the bottom. World-progress under such conditions would have been impossible. The word *civilization* would never have been born. Progress on the artistic side of dentistry is likewise impossible without formulating and codifying the experience of individual dentists. A manual of principles and rules of guidance must be drawn up. Future students ought to have it made possible for them to profit by the knowledge and discoveries of dentists who precede them.

Although I thus analyze the existing situation with respect to dentistry as a fine art, yet I do not assume to possess a knowledge of such compass as would enable me to formulate a course of study, even of the most elementary character, in this particular branch. Nevertheless, my years of endeavor in comparison with their puny results, and my discouragements as an instructor have made the formulation of some definite principles of art technic appear to be a permanent necessity. The thought has been many times driven home to my mind that under proper guidance, using the discoveries of those who have preceded me, or, of my contemporaries, it would have been very easy for me to have acquired long ago even more than that which I have painfully and imperfectly learned by experience alone. This paper is, therefore, not intended to be a treatise on technic; it merely expresses my individual theories, knowledge and convictions on one particular point.

It is agreed, I am sure, that crown and bridge work ought really to be an art. It is then proper and necessary to ask which one of the many definitions of art would best apply to it. Upon careful consideration I have found the answer most appropriately given in the trite but revealing epigram: "True art is to conceal art." In this epigram we also find described our difficulties and limitations. For we must reproduce nature exactly as we find her. Even her variations and imperfections must be copied. And right here our restrictions begin to make themselves felt. The artist in oil or marble has more latitude than we have. It is always within his power to flatter a little. In more dignified phraseology, he idealizes nature. He finds her unfinished and imperfect. She has good intentions, of course, but as Aristotle said, she cannot always carry them out. We dentists, however, cannot take liberties with our art. If we adopt as our ideal motto: "True art is to conceal art," we



must mean—as we ought to mean—that we are going to try to make a real imitation of nature, an imitation so perfect that nature herself would be deceived. In a word, we must compete with nature. Only when the observer cannot tell which is art and which is nature, can our work be considered wholly successful and artistic.

Such perfection of imitation inevitably implies an intimate study of nature. And indeed, the best artists of every period and of every department of art have developed upon this foundation. We, in our field, claim to be artists, but do we begin where we ought? Do we, in any complete sense, go to nature? Permit me to answer this question by asking another more concrete: If we studied nature carefully, instead of copying from each other, would we be satisfied to work with the conventionalized teeth which are furnished us by the manufacturer? We know that the bit of porcelain with which we make our crown is, as to characteristics, shape, and color, utterly unlike the human teeth. Rarely, indeed, can a porcelain be found which exactly fits, in all particulars, the case in hand.

It may be asked at this point: Why does not the manufacturer give us better teeth with which to operate? The answer is obvious: Because we do not require him to do so. He furnishes the profession with what is demanded, just as does any manufacturer. He is influenced in the production of artificial teeth by those shapes and colors which had the best sale the preceding year. And it is certainly not to be expected, in this unaltruistic age, that he will concern himself with a careful imitation of nature when dentists will unthinkingly take what is offered them. The product of the manufacturer is determined to a great extent by the large orders which are sent to him by the big advertising dental shops and laboratories. These shops order perhaps a hundred sets of teeth at a time. The point for us to note is that these teeth are all of one shape and color. In a recent conversation with one of the heads of a large dental manufacturing company, I asked whether the company would be willing to furnish a new set of models. He answered immediately: "When the dental profession knows what it wants, we will supply the demand; we cannot do business on any other basis." Certainly, manufacturers cannot be blamed for not undertaking to educate us as to what we ought to demand in order to do really artistic work. The fault, obviously, lies not with them, but with dentists themselves.

Perhaps it would be well at this point to look for a moment at the porcelain facings furnished us by the dealer. I might discourse at length on their unnatural shape, but I shall pause only long enough to say that the authoritative treatise on the anatomy of the teeth by Dr. Black and Dr. Brownell leaves no excuse on the part of manufacturers for furnishing us with such sorry imitations of the natural crown as we are obliged to use. I might also dwell on the fact that by far the largest percentage

of indications for Richmond crowns are in the mouths of patients past middle life; and yet the facings furnished have the appearance of the teeth of youth. They show no signs of age, no marks of wear. I know well, however, that abrasion, erosion, and even atrophied enamel formations may be imitated by grinding and by the use of high-fusing colors. I believe that we have a right to demand that the manufacturer furnish us with teeth which show all of the peculiarities of age. But it is not these things which I wish to emphasize in this paper; I wish to discuss the color of the teeth.

In the American-made teeth furnished us, the pigment, in a large proportion of the facings, is not properly distributed; it is put on the lingual side of the facing, and extends only over the gingival third. It follows that should we succeed in getting a facing somewhere near the size and color desired, the grinding of the gingival bevel which would be necessary in order to have the facing approximate the labial bevel of the band, would mean the loss of color. Even if this were not the case, the color would still be defective in extent, since the color in the natural tooth, while gradually decreasing in saturation, extends in most cases to the incisal third. This is especially true of cuspids. Furthermore, while the natural teeth in the same mouth will be of the same hue, there will usually be found a marked variation in tint, shade, or saturation. The cuspids have the greatest saturation and the laterals the least. These facts must be familiar to every dentist who has the least clinical experience; yet the manufacturer seems to have overlooked them entirely.

In order to get at the problem before us it is necessary to inquire first of all into the probable source of the color in the teeth. It is my belief that the tooth-crown receives its color mainly from the dentin, although the pulp may be a contributing factor. About 25 per cent. of the dentin is made up of organic matter. After the death of the pulp the organic portion of the dentin disintegrates, causing the tooth to become darker, and in some cases, radically changing the hue. In old age, when the pulp recedes, the hue appears to become more saturated, resulting, in some cases, in a decided orange. Since, in my opinion, it is the organic matter of the dentin which is mainly responsible for the color of the teeth, owing to the small amount of organic matter contained in the enamel, the color contributed by the enamel is probably negligible.<sup>1</sup> Indeed, American histologists are practically unanimous in agreeing on the absence of organic matter in the enamel. European histologists believe, however, that the enamel contains a slight amount of organic matter; but even they do not claim over 5 per cent. The amount of

<sup>1</sup>It is true that brown streaks are sometimes seen in the enamel, known as the brown striae (stri-ah) of Retzen's; but these are regarded by Tomes as being due to nutritive disturbances during the developmental period, and may, therefore, be left out of account. Retzen.—Tomes' *Manual of Dental Anatomy*, Chap. 3, page 58, 1890.



pigment contained in so small a percentage of organic matter would be hardly appreciable. Normal enamel, then, can be expected to contribute only white or brightness value to the color of the teeth. Very frequently, however, where the labial and lingual plates of enamel come together for a short distance on the incisal (most frequently seen in the lateral), the dark oval cavity is reflected through, and gives a grayish, and in some cases what appears to be a bluish, hue to the incisal. We have all experienced disappointment, I think, in trying to match this so-called blue tint in the incisal region. It is possible to obtain facings with a very washed-out blue tint at the incisal edge but they do not look natural when placed in the mouth.

Suppose, now, that we consider the enamel by itself. What is its color? We all have a more or less hazy notion, I think, but no exact symbol or symbols by means of which to express it. We usually call it gray. Do you mean by that what psychologists mean, namely, a mixture of black and white? The inexactness of our symbols of expression will be realized when I recall to your minds that although we are able to distinguish some seven hundred different brightness qualities between the deepest black and the most brilliant white, we have only about four symbols in common use by means of which to express them all: black, white, light gray, and dark gray. I have come to the conclusion, through my own experience and by questioning a number of my fellow-practitioners, that the enamel of the teeth may well be compared to a white pearl. This comparison may be best appreciated by examining the rounded cusps of a freshly-extracted bicuspid or molar. And indeed, to refer to the youthful denture as a row of pearls is not inappropriate. The teeth of people of mature years however, never receive such poetic comparison, for the enamel becomes stained with age. In this sense alone can the enamel be said to contribute to the color of the teeth.

If we make a casual examination of the stock of teeth at the dental depot, we would be inclined to say that the hues, tints, and shades of the solar spectrum were fairly well represented. Yet to the initiated the imperfection of the display is altogether too evident. And who of us has not repeatedly been disappointed in trying to match the human teeth? We are all more or less convinced, I am sure, of a serious defect somewhere. When we stop to think, however, our sense of justice, as I have said before, tells us that the blame does not rest alone on the dental manufacturers, for we ourselves do not, in most cases, know what we are really looking for. Even those favored persons who can carry the hue in their memories, or in their eyes, as we commonly say, rarely have any symbol which will exactly express its position in the solar series. Our terminology is lamentably deficient. Perhaps we call the illusive hue yellow. It is then fair to ask whether such a color as pure yellow is to be found in the teeth of the Caucasians? It is generally true that the color of the teeth of the type called brunette will be found to be more

saturated than in a blonde, and the pigment will be found to vary in proportion. For nature, here as elsewhere, tends to maintain an equilibrium, or harmony, in the body pigments. In the eyes, hair, skin and teeth there is usually a harmony of color. For example, if we should analyze the feelings we experience on first seeing a woman with her hair dyed red, the word *discord* would best express them, for the skin and hair would not be in harmony; and therefore the effect is quite the opposite from the one intended. A want of harmony between the hue, tint and shade of the teeth and skin is equally unpleasant, and yet I think it is an uncommon experience to see a porcelain crown that we cannot instantly detect, and which, if we were to pass judgment, we would pronounce off-color. In other words, we are conscious of the discord. My conclusion at this point is, therefore, that the first prerequisite for understanding the color of the teeth is to classify the types of human beings accurately, and name the color of teeth each type possesses.

If we had only distinct types to deal with, however, such as blondes and brunettes, the task of standardizing the color of the teeth might be comparatively easy. But by far the largest percentage of human beings are of that indefinite type which we class as brown-haired. Members of this class may have either blue or brown eyes, either light-brown hair or dark chestnut. Now, brown is a mixture of yellow and black; therefore it would not be accurate to symbolize this large group, the individuals of which are neither blonde nor brunette, as *brown*. Here we have another problem in terminology.

Enough has been said to show that we cannot get very far without accurate classification and symbols. We need the symbols to express our thoughts. Such a classification would not only result in more artistic production by the profession, and thus be a source of increased pleasure and pride in our chosen calling, and a great economy of time, but it would enable us to speak with authority; to agree on what we want. And the manufacturer could not lag far behind us.

It is not enough, however, to have the types of human beings accurately classified with a symbol designating the color of each; a knowledge of the fundamental laws which govern the phenomenon of color is a prerequisite to such an investigation. This appears on the face of it to be a formidable matter. A brief sketch, in which I hope to show their practical application to the subject under discussion, will convince you, however, that the difficulties in the way of the standardization of the color of the human teeth are more apparent than real. *First*, let me repeat that the hues to be found in the different types before mentioned, need to be standardized. I have come to the conclusion that the hues to be found in the Caucasian race lie somewhere between orange and red, and orange and yellow, in the spectral series, with the addition of white and black values; and that all the other colors are due to the effect of



what are known as the phenomena of simultaneous contrast, successive contrast and negative after-images. *Second*, we must adopt symbols or words which will express exactly the hue, tint, or shade indicated, and the degree of saturation; for pure tones are never to be seen in the teeth. In other words, we must have a systematized nomenclature of all the colors to be found in the human teeth.

The reason why we have no terminology for the colors to be found in the teeth, as well as in many other things, is due to deficient sensitivity and education. Yet natural history abounds in proofs that color discrimination is innate not only in man, but even in animals. Darwin<sup>2</sup> devotes several chapters to color discrimination among animals, and shows color to have a definite purpose and to be useful either as a means of protection or concealment from enemies, or as a means of recognition by their own kind. Colored fruits form by choice a considerable part of the food of monkeys in the tropical regions of the earth.

If monkeys can distinguish colors, then surely it may be inferred that so could the most primitive men. Tests on primitive people for the purpose of determining the sense-acuteness, have brought out the fact that their power of discriminating color was about equal to that of children in their first grade or in the kindergarten. In addition, the color vocabularies collected from different regions showed instances in which a single word was made to do duty for two or more color-sensations; that is, black and blue, for blue and green. All peoples, however, have a definite symbol for red. Such confused nomenclature naturally implies corresponding limitations in the degrees of sensory color-discrimination. And there are unquestionably other factors at work in determining the differentiation of the names for sensations. In the first place, it is quite conceivable that a sensation may not be of sufficient value or interest to receive a special name, although it is capable of being fully experienced and discriminated. Were we, for example, to ask of a civilized community what object they would describe by the word *gray*, surprising, indeed, would be the variety and incongruousness of their replies. Yet such confusion would not be inevitably the expression of deficient sensitivity. People could easily learn, under stimulus, the exact difference in meaning between gray and buff. The conclusion is that certain instances of confused terminology may be due simply to insufficient pains having been taken to analyze sensory experiences.

This conclusion is further borne out by a color test given at my request in the Irving Kindergarten School of St. Paul. The test was with Holmgren's wools. It was found that those children who had learned the names of the different colors could sort them, but those who did not know the names confused red with pink, and blue with violet. Faintly colored wools tended generally to be confused with one another.

<sup>2</sup> Darwin, *Descent of Man*, 2d ed., pp. 108, 279, 332, 335, 469.

From all this, I think we may safely and reasonably conclude that color-discrimination is innate; and second, that the power of discrimination among the finer shades and tints is only a matter of education. This second point has an important bearing, as you can readily see, on crown and bridge work considered from the view-point of an art.

But already in discussing a few of the factors that in my opinion, should be included in a treatise, even of the most elementary kind, dealing with the artistic side of the matter under discussion, I have used what might be called technical terms of a nature, which some will protest, no dentist can be expected to know or understand. Such a protest, of course, is a naive confession of ignorance, because a knowledge of the vocabulary of color is a prerequisite to even an elementary study of nature. It points further to a serious lack in our educational curriculum. A scientist should certainly know the terminology of his science and related sciences. For the replacing of natural teeth with artificial substitutes is the one science and art which we cannot help practicing; and if we cannot practice it well, we must continue to practice it poorly. In order, therefore, to make my points more intelligible, perhaps, I shall include at this point what must necessarily be a very sketchy and superficial review of the science of chromatics, and this merely for the purpose of making my nomenclature clearer.

Light—I refer to solar light—is the physical cause of our sensation of light. Webster<sup>3</sup> defines light thus: "Light is that agent, force, or action in nature by the operation of which upon the organs of sight, objects are rendered visible, or luminous." Without going into the various theories of light, let it suffice to say that it is composed of an indeterminate number of variously-colored rays. The sensation of color depends upon a peculiar function of the retina, or optic nerve, in consequence of which rays of light produce different effects according to the length of their waves or undulations, waves of a certain length producing the sensation of red, shorter ones green, and those still shorter blue, and so on. The color of objects depends upon their power to absorb or reflect a greater or less proportion of the rays which fall upon them. In other words, the natural color of objects results from the fact that one portion of the colored rays contained in white light is absorbed at the surface of the body, while the other portion is thrown back. It is the ray which is thrown back that gives the color to the object. For example, if the light which falls on an object is completely absorbed by that object, so that it disappears from sight as if falling into a perfectly dark cavity, the object appears to us black. On the other hand, if all the light is reflected from the surface, the object appears white. The rays may also be modified by the character of the surface.

You can readily see how this affects our science. If the object is polished, as are the surfaces of the artificial teeth furnished us by the

<sup>3</sup> Webster, Noah, *International Dictionary*.



manufacturers, the rays are pressed together, as it were. They are then thrown back as a solid beam. If, however, the surface of the object is irregular, as is, for example, the enameled surface of the natural teeth (I refer to the imbrication lines of Pickerell),<sup>4</sup> the rays are dispersed in every direction. While the unabsorbed rays may be the same as those thrown from a polished surface, yet we are immediately conscious of a difference in color. This has an important bearing on the color of the teeth. It is at once apparent that to obtain a perfect match in artificial teeth, we must have not only the same color, but also the same kind of surface. I have no doubt, however, that since both Pickerell and Williams<sup>5</sup> have called attention to this subject in their exhaustive monographs published recently, the tooth manufacturers will soon accept the suggestion.

Another matter that must be taken into consideration is the checks and cracks to be found in the enamel of the teeth as people grow older, especially in those of people past middle life. In the same way that the grooved surfaces of the enamel affect the hue of the teeth, so these checks and cracks must be counted as a modifying factor when matching artificial and natural teeth.

Since the color of the teeth is affected by so many factors, it will perhaps be wise to go more deeply into the definition of color. The psychologist recognizes three aspects of color: hue, degree of saturation, or purity, and illumination, or brightness. When a ray of sunlight is admitted through a small aperture in the window-shutter of a dark chamber, what is seen is a round and colorless image. If, however, a glass prism is interposed in its path, the beam on emerging from the prism becomes refracted towards its base, producing on a distant screen a vertical, rounded band no longer white, but showing all of the hues of the rainbow. This is called the solar spectrum. What has happened is this: the white ray has been broken up into its elemental hues—red, orange, yellow, green, blue, violet. It is interesting to note at this point that here is the only place in nature where we get pure hues. The hues of the landscape, for example, are always modified by a mixture of white or gray light.

But to return to the matter in hand. Now if we should discover that the hues in the human teeth could be placed in the orange part of the spectrum, we would have an important starting-point. In order, however, to match the exact tint or shade of orange, it would be necessary to determine not only the hue, but the degree of saturation or purity. This can be best illustrated by charts,<sup>6</sup> the first one showing the highest degree of saturation possible to obtain. The next chart is slightly less saturated, and so on through fifty charts. The last chart shows only

<sup>4</sup>Pickerell, *Prevention of Dental Caries*, Chap. IV, pp. 62, 67, 69, 73.

<sup>5</sup>Williams, *New Classification of Natural and Artificial Teeth*.

<sup>6</sup>Charts used as illustrations.

a faint trace of the orange hue. The point to be noticed here is that the hue is the same. No other hue has been added because of the lower degree of saturation, for white is not properly a hue. It is not correct, however, to call the diluted orange tint, yellow. Yet this is the mistake made by the average person. A course in color-discrimination would not come amiss in order to avoid such common errors. The mistake of calling orange yellow has been made, I believe, by Dr. Clapp,<sup>7</sup> for the charts attributed to him and published in J. Leon Williams' book on *A New Classification of Tooth Forms* shows the gingival third of the tooth as orange, in which there is a slight overlapping of yellow; the middle third is called yellow; and the incisal third, gray. While I believe that Dr. Clapp has distributed the hue about as it is found in nature, yet the pigment in the dentin will be represented, it must be emphasized, by *one* hue with a more or less degree of saturation.

Another interesting element enters into the situation. Those of us who have offices which admit the direct sunlight during certain hours of the day will appreciate the effect of illumination or brightness in changing the hue of the teeth. The red end of the spectrum when highly illuminated gradually changes to orange. If the brightness is increased, it appears yellow; and if still further increased, it looks white. The blue end of the spectrum, on the other hand, becomes gray under increased illumination. Conversely, if the spectrum is darkened, the red end looks brown or black, and the blue end looks black. This can be readily tested by walking at twilight in a garden filled with variously-colored flowers. As darkness gathers, the colors gradually disappear, even though the shapes of the flowers may be distinctly seen. The photograph illustrates the same thing. The hue here is left out, only degrees of brightness being noticed. In matching the teeth, therefore, the kind and amount of illumination under which they are seen has to be considered. Let me explain this matter more in detail. The natural teeth, because of their position in the mouth, surrounded as they are, by the shadow of the lips, and back of them the more or less dark, oral cavity, will be under a very different illumination from the artificial tooth held in the hand or tweezers, or in front of the patient. In order to be sure that the artificial tooth will match in color the natural teeth, it is best to defer the selection of the tooth until the tooth to be crowned is ground off sufficiently to allow the facing to be placed in the exact position it is to occupy permanently.

Now, we must take into account one other thing in order to match our teeth successfully. If we look for some time at a red, and then look at a colorless wall or a piece of paper, we find that a greenish tinge is given to the colorless wall or paper. Similarly, if we do the same thing with a greenish object, we find it to be followed by a reddish tinge.

<sup>7</sup>Page 67, Dr. Clapp's Chapter on Color.



Again, if we look for a time upon a yellow object, and then focus on a colorless ground, the latter takes on a bluish tinge. Similarly, the blue is followed by a yellowish tinge. This is the phenomenon of *negative after-images*. Again, if I place a yellow and a blue alongside of each other, the yellow will appear "yellower." (i.e., more saturated) and the blue will appear "more" blue, at the line of junction. If I place a green alongside of a red, the green and red will each appear more saturated at the line of junction. This is called *simultaneous contrast*. Again, if I look from a yellow to a blue object, the latter will appear "more" blue, i.e., more highly saturated, than before. The same holds of the relationship of red and green. This is called *successive contrast*.

These things must be taken into account and guarded against if we would make successful matches of color. A bright object appears brighter when put alongside of a darker one, and vice versa. And just as the object that is placed alongside of the red takes on a greenish tinge, so the human teeth appear greenish when seen surrounded by the healthy red tissues of mouth and lips. Thus teeth that in themselves are of a decidedly orange hue, will often appear greenish yellow, as a result of their being surrounded by very red tissues. In short, the factor of negative after-images and simultaneous and successive contrast tend to make the teeth appear of a different hue and a different brightness when inside and when outside the mouth.

As I stated at the beginning of my paper, it has not been my intention to formulate here a course of study which will give us the right to consider crown and bridge work among the fine arts. I have merely endeavored to indicate a few factors which enter into securing artificial teeth that shall be a real imitation of nature. The requisites of prime importance for the individual dentist are: to be fully informed on color; to train his powers of color-discrimination, and thoroughly to understand all of the elements which enter into a modification of the color of the teeth.

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## REMOVABLE BRIDGE WORK WITH CAST CLASPS\*

BY R. M. OLIVE, D.D.S., FAYETTEVILLE, N. C.

## TECHNIC

THE PATIENT'S TEETH to be clasped are cleaned and polished, and the occlusion noted and space must be provided for the lugs at this time, if it does not exist. Next, an accurate plaster impression is taken, and this is one of the main things in the whole process, because it is impossible to make a perfect bridge without an accurate impression. A small bridge tray is oiled. The impression plaster should be mixed thinner than for other work, as we wish to obtain sharpness and definition in all our tooth lines. When the plaster is about set, the tray is removed. The plaster is allowed to complete its setting. The plaster is scored at suitable points so that it can be removed in sections. The sections are then put together in the impression tray and stuck together with a little sticky wax. Several impressions are taken before we secure an accurate one, generally. Next, a modeling compound impression is taken of the opposing teeth and a small guide bite in wax is taken; then shade of teeth is noted. The patient need not be seen again until the bridge is complete.

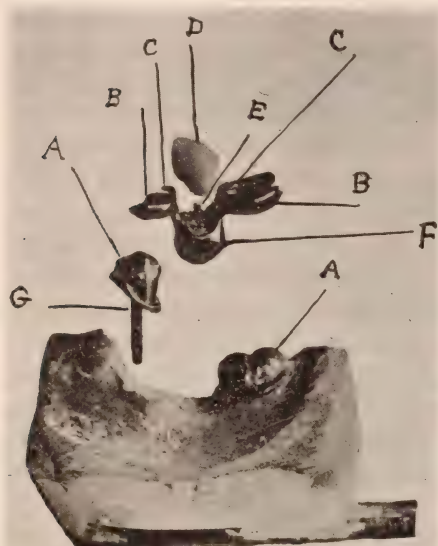
The impression is coated lightly with shellac and with sandarac, and is set aside to harden. The teeth to be clasped are made removable from the model, and are packed with amalgam, sinking small dowels into the amalgam before it begins to harden. Care should be taken to shape and smooth the dowels so they will draw easily from the model, and to set them as parallel as possible, so that both teeth no matter how badly tipped, can be removed in the same plane. After the amalgam has set, the dowels are oiled, and the balance of the impression is packed with Weinstein's Artificial Stone. The artificial stone gives a more satisfactory working surface than plaster of Paris, and is very much harder. The compound impression is also poured, and the two resulting models are mounted on an anatomical crown and bridge articulator, using the wax guide bite to establish occlusal relations.

We now have a correctly articulated model with two removable amalgam teeth, having their dowel pins in the same plane so that both teeth can be removed freely. The clasps are then outlined on the amalgam teeth, waxed up and cast. I use Kerr's Graphite Inlay Compound. After freeing the clasps from all adhering investment they are boiled in an acid bath, and smoothed and fitted to the teeth, which, being removable, make this part easier. A Davis bicuspid crown, or an Ash tube tooth of proper shade is ground so as to leave sufficient thickness for a saddle, in the posterior bridge.

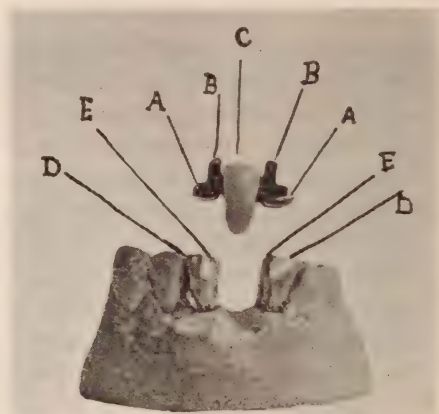
\*Read before the North Carolina State Dental Society, 1918.



The middle section, comprising the saddle, cup for porcelain, and post, is then cast. A post of any high fusing metal, about 15 wire gauge B. & S. picked up in the casting, and may be made doubly secure after casting, with a bit of solder. After pickling and cleaning, this middle section is placed in proper relation to the clasps on the model, plaster



- A—Amalgam tooth (part of model) made removable from model so the wax impression for clasp can be carved more easily.
- B—The cast clasp.
- C—The spud, or occlusal rests.
- D—Detached post crown.
- E—Post for crown, cast to base.
- F—Base, or saddle, cast separate from clasps.
- G—Dowel to amalgam tooth.



- A—Cast clasps.
- B—Occlusal rest (part of clasp) extended on lingual surface to prevent metal from showing.
- C—Facing. Soldered after clasps are made.
- D—Amalgam tooth (part of model) made removable from model.
- E—A small portion of occlusal edge ground from tooth for occlusal rest.

relations of the parts are taken, and the three parts assembled at one soldering. The framework is then tried on the model and any error in fit resulting from the soldering process corrected, if necessary.

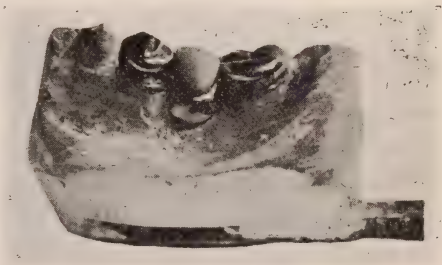
The framework is then polished, and the porcelain teeth are cemented to middle section. In making the lower anterior bridge, demonstrated at my clinic, I usually solder the facings to the clasps.

The casting gold is one of the most important items. Mr. Weinstein, of New York, has evolved a new alloy for casting clasps, now known as Ney-Oro casting gold "E." This casting gold is a combination of several metals, such as platinum, gold, palladium, and a few other metals that are required to make the alloy perfect. This metal resembles a steel spring. It is very rigid and has the quality of a piece of well-tempered steel. The base for the saddle is cast of Ney-Oro casting gold "B".

These casting metals may be had from J. M. Ney Company. The clasps *must* have the properties mentioned above.

#### ADVANTAGES CLAIMED FOR THIS TYPE OF BRIDGE

1. An appliance that can easily be removed and cleaned by the patient.
2. No grinding of enamel, except a small place for the lugs, and no devitalization of pulp.



3. Can be constructed with a minimum of nervous strain to the patient and dentist.
4. Has a maximum of stability and food grinding surfaces.
5. There is nothing to irritate the gums.

We would not think about putting a removable bridge of this type in for a person who does not brush his teeth regularly and carefully. There will be no decay where the teeth are kept clean. If a cavity should result from the clasp it can be easily repaired by the many methods we have at our disposal.

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### Arthritis and Oral Infection

In a discussion on rheumatoid arthritis that took place at a recent meeting of the Medical Society of London, Dr. A. P. Beddard, reviewing the causes and treatment of the condition, said that all joint affections, with the exception of gout, were due to infection. In order to treat the condition we must first find out where the infection came from and then investigate its bacteriology. In his opinion, in about 90 per cent. of the cases the infection came from the teeth and gums. It was impossible to say what the state was of the deep tissues of the mouth after a superficial examination; the use of X-rays was absolutely essential. Of the other 10 per cent., the infection in a few, possibly came from infected tonsils and adenoids. "We must have common ground between the medical and dental points of view, and there was an enormous field for the education of the two professions in this connection."

—*News and Notes, The Dental Record.*



## CANCER OF THE ORAL CAVITY, JAWS AND THROAT.

TREATMENT BY ELECTROTHERMIC METHODS OR IN COMBINATION WITH SURGERY, THE ROENTGEN RAY AND RADIUM, WITH AN ANALYSIS OF TWO HUNDRED CASES SO TREATED\*

BY WILLIAM L. CLARK, M.D., PHILADELPHIA, PA.

**E**LECTROTHERMIC METHODS are peculiarly adapted to the treatment of cancer within the mouth. Malignant tissue (including bone) occurring in any part of the oral cavity comprising the lips, buccal surface, tongue, floor of the mouth, alveolus, hard palate antrum, tonsils, pharynx, epiglottis, larynx and proximal end of the esophagus may be destroyed with one electrothermic operation.

It is not necessary to split the cheek surgically to render a growth accessible to treatment, since the exposure secured by the use of a mouth



Fig. 1.—A, basal cell epithelioma of the upper lip in a woman, aged 72, referred by Dr. William Hamilton, of Philadelphia. One desiccation treatment was given in September, 1914. B, result. Note absence of contracted scar. No recurrence in nearly four years.

gag, cheek retractors, traction on tongue by means of a suture or tongue forceps, or by the use of an endoscope is sufficient to permit the destruction of a growth. A tongue may be coagulated to the base and then excised without hemorrhage.

In addition to the desiccation or coagulation of tissues and the sealing of blood and lymph channels, the heat penetrates beyond the area totally destroyed and devitalizes malignant cells without impairing the healthy tissue, thus lessening the likelihood of local recurrence or metastasis and conserving the maximal amount of normal tissue.

\*Read June, 1918, before the Section on Stomatology, (A.M. A.) of which THE DENTAL SUMMARY is the representative organ for the dental profession by special arrangement.

Blood vessels encountered in the oral cavity are blocked by the current, and secondary hemorrhage rarely occurs. The efficiency of electrothermic methods is increased in some cases by the judicious use of operative surgery, the roentgen ray and radium.

#### ELECTROTHERMIC METHODS

The methods to be considered are electrodesiccation and electrocoagulation. The desiccation method is one by means of which malignant growths of small or moderate size may be destroyed by the utilization of heat of just sufficient intensity to desiccate or dehydrate the tissues, and is produced by a monopolar high frequency current of the Oudin type, which is applied to the lesion by means of a steel needle or other pointed

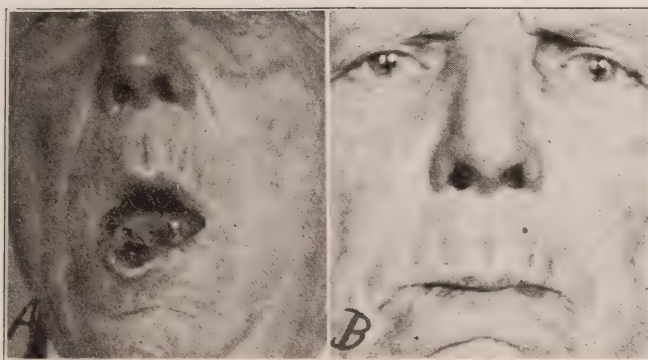


Fig. 2.—*A*, epithelioma of lower lip, a recurrence after surgical excision, in a man, aged 75, referred by Dr. Paul Cassidy, of Philadelphia. One desiccation treatment under local anesthesia was given in April, 1915. *B*, result of treatment. Note absence of contracted scar and regeneration of lost tissue in lip. No recurrence in more than three years.

metallic applicator (usually steel knitting needles), which may be cut and curved, if necessary, to suit the case under treatment. The desiccation method is of advantage when the lesion is localized and a good cosmetic result is to be desired, and is subject to such control as to area and depth that a very small growth even on the cornea may be successfully treated without injury to vision, as may a growth on the vocal cords be destroyed without impairing phonation. The very slight trauma and absence of secondary inflammation probably explains the absence of scarring and the success obtained in treating delicate structures.

Electrocoagulation is produced by a bipolar high frequency current of the d'Arsonval type, is more penetrating and intense in action than the desiccation method, and is utilized to destroy large growths, including those that involve bone.

There are many variations of technic in the application of both methods to suit the requirements of the individual case, which need not be con-



sidered in detail here.<sup>1</sup> The heat from high frequency currents, unlike that from the thermocautery and galvanocautery, is not transmitted by contact, but is generated within the tissues by the resistance offered to the current. The cautery is comparatively superficial in action, while the high frequency current under proper conditions will penetrate and destroy tissue to any depth, in parallel or divergent lines, depending on the size and arrangement of the electrodes, and also the strength and quality of current, which are varied to suit indications.

#### OPERATIVE SURGERY, THE ROENTGEN RAY AND RADIUM.

When the antrum or other structures not easily accessible are involved, or when normal tissues cover the growths, operative surgery should be practiced as a preliminary to expose the lesion or to extirpate the gross mass of malignant tissue followed immediately by the electrothermic treatment to check hemorrhage and to reach malignant tissue not possible to reach by the scalpel or bone-cutting instruments.

When involved cervical glands are to be removed, excision must be practiced first, but this may be followed by desiccation treatment even on the outer walls of the blood vessels or in close proximity to nerves, with safety, if great care is exercised.

Before large growths at the base of the tongue, epiglottis, larynx or esophagus are treated, a tracheotomy should be done first and the larynx packed from below to prevent aspiration of toxic or other secretions. The ligation of the external carotid, and in rare instances the common carotid may be practiced as preliminary to the treatment of some growths of the throat. Hemiplegia may occur, however, in the latter instance.

Deep, cross-fire roentgen therapy, according to standard technic, should be applied to the neck after dissection of the cervical glands, with the hope of preventing recurrence. When the glands are not involved, the roentgen ray should also be applied to them after electrothermic treatment of the primary lesion. The roentgen ray is of more value in the latter instance than in the former, as its use often prevents involvement of the glands, and when they are involved the roentgen ray will often retard the progress of the disease. Deep, cross-fire roentgen therapy may be used following electrothermic destruction at the site of the primary lesion to reach possible outlying cancer cells, as may radium, especially within the mouth; but the same area should never be treated by both the roentgen ray and radium. I have never seen any benefit result, however, from the use of the roentgen ray or radium alone in the treatment of cancer within

<sup>1</sup>Pfahler, G. E.: *Electrothermic Coagulation and Roentgenotherapy in the Treatment of Malignant Disease*, Surg., Gynec. and Obst., December, 1914. Clark, W. L.: *Electrical Desiccation as an Adjunct to Surgery, with Special Reference to the Treatment of Cancer*, *ibid.*, August, 1912. *The Desiccation Treatment of Congenital and New Growths of the Skin and Mucous Membranes*, *The Journal A. M. A.*, Sept. 12, 1914, p. 925; *Electrothermic Methods in the Treatment of Rodent Ulcer, Urol. and Cutan. Rev.*, November, 1917.

the oral cavity, but the roentgen ray and radium are of undoubted value as adjuncts to electrothermic methods and surgery.

#### CLINICAL OBSERVATIONS

Cancer of the mouth occurs more frequently in men than in women. The great majority of persons suffering from malignant lesions within the mouth have all their lives been unsanitary or careless in the care of their mouth and teeth. Indifferent dental work or rough teeth causing continued irritation has been found to be a predisposing cause in many

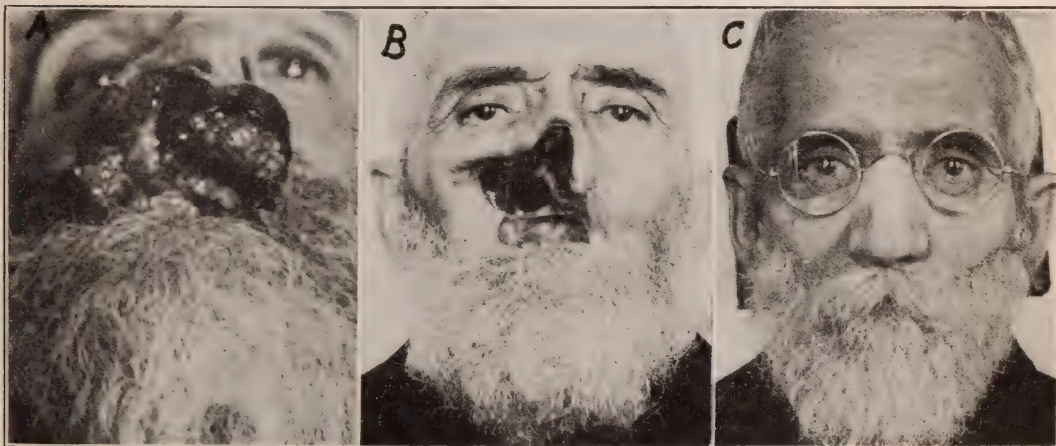


Fig. 3.—A, epithelioma involving upper lip, antrum, septum, nose, alveolus and hard palate, of three years' duration, in a man, aged 66, referred by Dr. J. D. Graber, of Royersford, Pa. Previous treatment by plasters and the roentgen ray had been unsuccessful. The case was pronounced hopeless from a surgical standpoint by Dr. John Chalmers DaCosta, of Philadelphia. One electrothermic coagulation treatment under ether anesthesia was given, March 1, 1916, and two slight recurrences were treated under local anesthesia by the desiccation method. B, final result, with no recurrence in two years and five months. C, reconstructed features by the sculpture method, executed by Major R. Tait McKenzie, of Philadelphia, and Mrs. Alan Chesney, of Baltimore. A plaster cast was made and the lost features built out in clay. A copper plate of suitable thickness was deposited on the cast by electrolysis and then silver plated. This plate was painted to match the tint of the skin, the mustache added and the plate attached to the rims of the glasses. A similar plate may be kept in place by means of spirit gum without the aid of the glass frames if desired. A plate is under construction to replace the hard palate and with artificial upper and lower teeth, in the hope that the patient may improve articulation and better masticate his food.

cases of mouth cancer, for the disease begins exactly at the site of the area which has been subject to a continued irritation.

Permanent bridge work and poorly-fitting plates permitting the retention of food, and irritation to the gums are also factors in the development of malignant disease in the mouth. The removable bridge is best, and great care should be taken by dentists in properly fitting and adjusting plates.

Leukoplakia, papillomas, angiomas, chronic stomatitis, root abscesses, pyorrhea, acid mouth and fistulas should be appropriately treated



as a prophylactic measure against the development of malignant disease.

The irritation caused by excessive smoking is a contributory factor to the development of leukoplakia and mouth cancer, especially in those who fail to keep the mouths and teeth clean.

A striking number of mouth cancer patients are also syphilitic, and a combined tertiary lesion and cancer is not uncommon. This is true also of tuberculous lesions.

All papillomas or ulcers in the mouth showing a tendency to progress, unless the lesion is positively and purely syphilitic, should be treated just as though they were cancer, regardless of the pathologic finding, as all papillomas are potentially malignant. When cancerous lesions in the

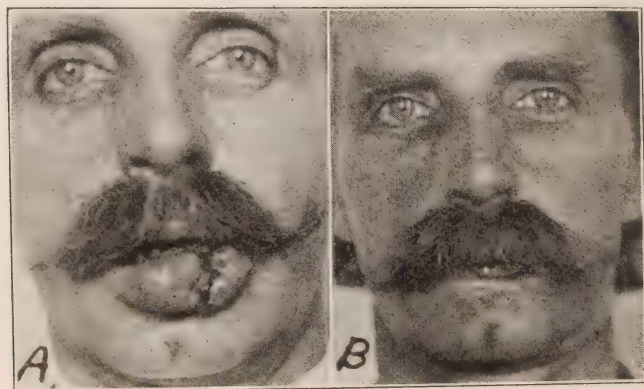


Fig. 4.—A, epithelioma involving the whole of the lower lip, in a man, aged 48, referred by Drs. G. C. Bird and J. F. Ulman, of Philadelphia. One desiccation operation to the lip was performed under local anesthesia. B, result of desiccation treatment. Note absence of contracted cicatrix and regeneration of lost tissue. No recurrence in lip in four months.

mouth are treated by mercurials, iodides, or salvarsan, in mistake for syphilitic lesions, the disease is almost invariably aggravated by their use.

A section should never be taken for pathologic examination except immediately before operation, if this seems necessary. A frozen section can be made and a diagnosis returned in ten minutes. By excising a piece of tissue for examination and waiting one or two weeks for a report, one will probably find that metastasis or rapid extension of the disease has taken place, owing to the opening of blood and lymph channels.

Before treatment is begun in any case of mouth cancer, a careful stereoscopic roentgenographic study should be made to detect possible bone or antrum involvement. Transillumination tests also should be made as a confirmatory diagnostic measure.

Success in the treatment of cancer is obtained only by absolute eradication of the last vestige of disease, else it will surely recur, and will progress more rapidly than if left alone.

Malignant lesions occurring in the mucous membranes are usually of the squamous cell type. They progress rapidly and metastasize early, in contradistinction to the basal cell or rodent ulcer type occurring on cutaneous surfaces, which progress slowly and seldom metastasize. If



Fig. 5.—A, epithelioma involving nose, cheek, brow, eyelid, globe, and bones of orbit and antrum in a woman, aged 59, referred by Dr. T. L. Bradford, of Philadelphia. Roentgen treatment had previously been used unsuccessfully. One intensive electrothermic coagulation treatment under ether anesthesia was given in March, 1917. B, result of one treatment. No recurrence in year and a half.

the mouth cases are localized and treated by electrothermic destruction and the cervical glands treated by the roentgen ray, a fair percentage of cases will be clinically cured.

The prognosis of cancer of the mouth with cervical glandular metastasis is always bad, no matter how early seen, yet a fair percentage



Fig. 6.—A, basal cell epithelioma, involving tissue and bone at angle of jaw, in a man, aged 73, referred by Dr. John Hedges, of Philadelphia. The roentgen ray had previously been used without success. One desiccation treatment under local anesthesia was given in March, 1917. B, result of one treatment. Note absence of contracted scar. No recurrence in one year and a half.

of patients recover after appropriate treatment, and it is worth while to attempt treatment when the glands are movable and not adherent. This is especially true when only the first group of glands is involved. When



the glands are adherent and other structures in the neck are involved, it is not worth while attempting treatment except for palliation. In early diagnosis and treatment lies the only hope.

Lip cases and small lesions within the mouth may be treated under local anesthesia; but if the lesion is advanced, general anesthesia should be employed to insure thorough destruction.

ANALYSIS OF TWO HUNDRED CASES OF CANCER OF THE ORAL CAVITY,  
JAWS AND THROAT.

Two hundred cases were treated by one or both of the electrothermic methods or in combination with surgery, the roentgen ray and radium.



Fig. 7.—A, rodent ulcer involving bone of maxilla and mandible, of three years' duration, in a man, aged 50, referred by Dr. William H. Schmidt, of Philadelphia. One electrothermic coagulation treatment was given under ether anesthesia in April, 1915. B, result. No local recurrence in eight months, when patient died with what was diagnosed as abscess of the brain by the attending physician, but which may have been metastasis.

Surgery was used when the lesions were inaccessible to the current, when it required the incision of healthy tissue to expose the growth, or when it was necessary to excise the glands. In the majority of these cases the roentgen ray, radium or both had been used before without success, in which case these agents were not used again. When the roentgen ray or radium had not been employed before, one or both measures were used in combination with electrothermic methods, when judgment indicated the wisdom of so doing.

Two types of cases were selected for the series. *First*, those that were distinctly localized in which a guardedly favorable prognosis could be given, and *second*, those which had metastasized to the cervical glands, but the glands were movable and not adherent to the tissue of the neck, in which the prognosis was unfavorable, but judgment indicated there was a chance of success if treated by combined measures.

Numerous other very advanced cases, in which the primary lesion was very extensive, with adherent metastatic glands, and involvement of other structures in the neck, were either declined as absolutely hopeless or else treated palliatively with no thought of cure, but sometimes to destroy a growth on the tongue or in the throat to ease temporarily the respiratory function or to render the intake of nourishment possible or more comfortable, and with the idea of alleviating pain and prolonging life.

The distribution of the cases treated and the results obtained are

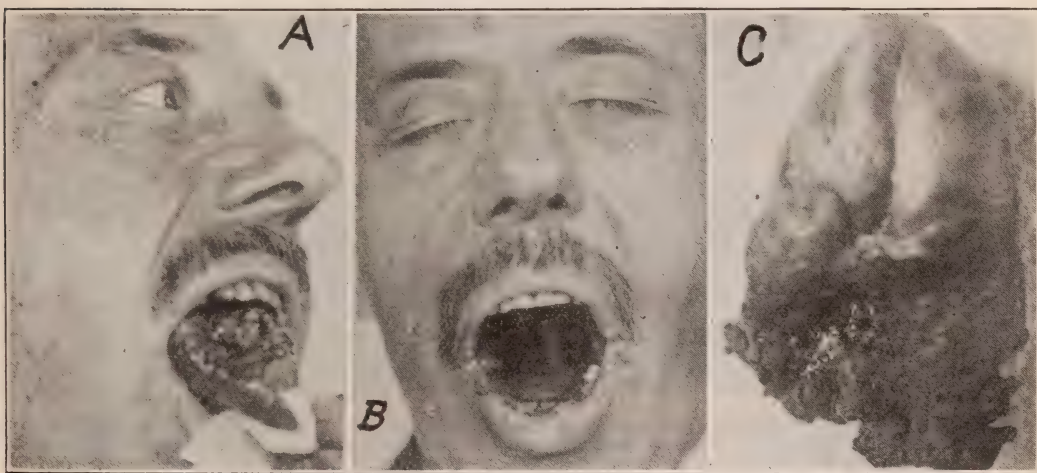


Fig. 8.—A, advanced squamous cell carcinoma of the tongue of four months' duration in a man, aged 46, referred by Drs. John B. Deaver and Walter Ziegler, of Philadelphia. The cervical glands were involved and treated by the roentgen ray. The tongue was amputated at the line of the tonsils by the electrothermic coagulation method under general anesthesia, without hemorrhage. Little pain or discomfort followed the operation. B, result after electrothermic treatment. No local recurrence in two months. This photograph is shown to demonstrate the practicability of amputation of the tongue by the electrothermic method. C, tongue in another case immediately after amputation by this method. Note coagulated area at distal end.

presented in the accompanying table. A brief outline is necessary to complete the presentation:

1. *Upper Lip*.—Localized: The nine cases of epithelioma of the upper lip, some of which were advanced, though without metastasis, were all treated once by the desiccation method, under procain-epinephrin anesthesia, and there has been no recurrence in from six months to four years.

2. *Lower Lip*.—Localized: The sixty-one localized lower lip cases were all treated under local anesthesia by the desiccation method. There has been no local recurrence in any case in from three months to eight years. In one case a cervical gland became involved two years after treatment of the lip and was excised by Dr. Charles Nassau, of Philadelphia, with no recurrence in two years.

Mestastasis: Of the three lower lip cases with glandular involvement, the primary lesion was treated by desiccation, and the glands were



excised under the same anesthetization and the roentgen ray employed. There was no local recurrence in the lip in any case, but there was recurrence in the neck in two cases from which patients died. There was no recurrence in the third case either in lip or neck in two years.

3. *Alveolus (Upper Jaw) and Hard Palate.*—The thirteen cases involving the alveolus and hard palate were treated by the coagulation method under general anesthesia. In eight there was no recurrence in from three months to three years. Four recurred and were lost track of, while the other one is now under treatment again.

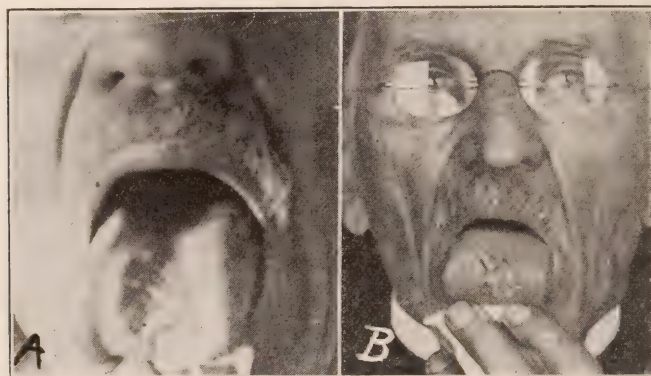


Fig. 9.—A, epithelioma of tongue of six months' duration in a man, aged 74, referred by Dr. J. C. Biddle, of Fountain Springs, Pa. B, result of desiccation treatment under local anesthesia in May, 1911. There were enlarged glands on both sides of the neck in this case, which were probably inflammatory, since they disappeared after the treatment of the tongue lesion and the application of the roentgen ray to the neck. There was no recurrence in four and one-half years, when the patient died of some other disease.

4. *Alveolus (Lower Jaw) and Floor of Mouth.*—Localized: Of the twelve localized alveolus and floor of mouth cases treated by electrocoagulation, six patients have remained well for periods of from three months to four years. Two had no local recurrence, but glands became involved, and four had both local recurrence and cervical metastasis.

#### CASES OF CANCER TREATED AND RESULTS OBTAINED.

Anatomic Location		Localized Result— No Recur- Recur- rence      rence		Cervical Metastasis— Result— No Recur- Recur- rence      rence		
1. Upper lip	9	9	0	0		
2. Lower lip	61	61	0	3	1	2
3. Alveolus (upper jaw) and hard palate	13	8	5	0	0	0
4. Alveolus (lower jaw) and floor of mouth	12	6	6	10	1	9
5. Tongue	15	10	5	6	2	4
6. Buccal surface	14	8	6	7	0	7
7. Antrum	2	2	0	0	0	0
8. Tonsils	5	3	2	2	0	2
9. Pharynx	2	1	1	0	0	0
10. Epiglottis, larynx, base of tongue and esophagus	3	0	3	0	0	0
11. Advanced lesions involving sever- al structures in mouth	13	5	8	23	5	18

**Metastasis:** Of the ten cases involving the alveolus and the floor of the mouth with metastasis, only one patient has remained free from recurrence and he has been well three years. Three remained well for periods of from three months to one year, but finally there was recurrence in the neck. In the remaining six, recurrence followed in a short time, and were soon beyond the hope of benefit.

5. *Tongue*.—Localized: Of the fifteen localized tongue cases, seven were treated by the desiccation method under local anesthesia, and eight by the coagulation method under ether anesthesia. There was no recurrence in ten cases in from three months to five years. Two recurred locally, and the glands became involved. These patients were treated again, but unsuccessfully. In three there was no local recurrence, but the glands later became involved. These patients reported too late for further treatment.

**Metastasis:** The six tongue cases with cervical involvement were treated by combined coagulation, surgery or the roentgen ray. One patient remained well for four and one-half years, when he died of some stomach trouble. (*Fig. 9*). Another has been well two years. Two had no local recurrence, but there was recurrence in the neck, and two had recurrence both in the tongue and in the neck. They were not treated again.

6. *Buccal Surface*.—Localized: Of the fourteen buccal surface localized cases, eight patients have remained well after electrothermic treatment for periods ranging from four months to four years. The other six cases recurred either locally or the glands became involved, and they were not treated again.

**Metastasis:** Of the seven buccal surface cases with glandular involvement, all recurred either locally or in the neck, and soon were beyond hope.

7. *Antrum*.—The two antrum cases were treated first surgically and then by electrocoagulation. There was no recurrence in one case in fifteen months and in the other in two years.

8. *Tonsils*.—Localized: Of the five localized tonsil cases, three have not recurred in from one to two years. Two had local recurrence and the glands became involved and could not be treated again.

**Metastasis:** Both cases recurred locally in the neck and were not treated again.

9. *Pharynx*.—One case soon recurred locally, but the patient is well three months after a second treatment. The other recurred locally and involved structures that were inaccessible and could not be treated again.

10. *Epiglottis, Larynx, Base of Tongue and Esophagus*.—These three cases were all unsuccessful. One patient died of pneumonia a few days after treatment, probably owing to aspiration of secretions, a preliminary tracheotomy not having been performed. The second patient



died of secondary hemorrhage two weeks later. There was recurrence in the third case, and a second operation was not attempted.

11. *Advanced Lesions Involving Several Structures in Mouth.*—Localized: Five of these thirteen patients have remained well for periods ranging from three months to two years. In the remaining eight cases there was local recurrence, and the glands became involved, rendering them hopeless.

Metastasis: Of these twenty-three cases, five remained free from recurrence from three months to one year. The others all recurred and soon were beyond hope of benefit.

When the lesions recur only locally, there is a chance of success if the patient is treated a second or, indeed, a number of times; but if there

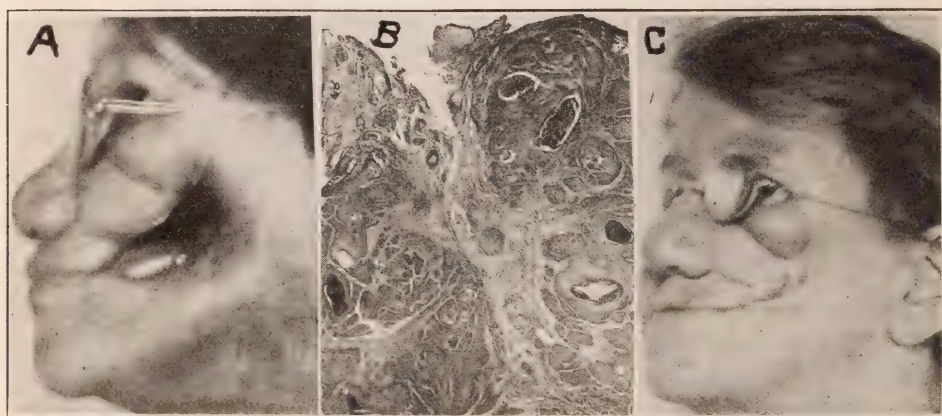


Fig. 10.—Squamous cell carcinoma involving antrum, alveolus, hard palate and buccal surface on left side in a woman, aged 60, referred by Dr. E. B. Miller, of Philadelphia. Since involvement was extensive in this case and some of the diseased tissue was inaccessible, preliminary surgical removal was done by Dr. G. M. Dorrance, followed immediately by electrothermic treatment. *A*, result of this treatment. No recurrence in fifteen months; *B*, low power photomicrograph (showing prickle cells) on which diagnosis was based; *C*, result of plastic operation in which tissues were separated from bony attachments, and cheeks drawn together and sutured.

is recurrence in the glands of the neck, further treatment is usually of no avail, but this is not necessarily always the case.

The basal cell, or rodent ulcer, type of epitheliomas, occurring on cutaneous surfaces, even though advanced and with bone involvement, is so satisfactorily treated by the desiccation and coagulation methods, that these lesions practically all recover when treated thoroughly.

It will be seen that the chances of success, in cancer of the oral cavity vary with localization, the anatomic location and the presence or absence of glandular involvement.

The foregoing analysis of results obtained in 200 cases, and the illustrations, will serve to give an idea of the role of desiccation and electrothermic coagulation methods can be expected to play in the treatment

of cancer of the oral cavity, jaws and throat, and in which types of cases the use of operative surgery, the roentgen ray and radium in combination is justifiable.

Medical Arts Building.

#### DISCUSSION ON PAPERS OF DRS. CLARK AND NEW

DR. A. J. OCHSNER, Chicago: I am not familiar with this method. My observations are based entirely on the treatment of these growths with the actual cautery. I have used this method most successfully. Many of my patients remain well for many years following the use of the soldering iron, whereas if the same growth is removed by the electric cautery or even the Paquelin cautery the result is not so good. I believe that is due to the fact that the heat of the soldering iron penetrates deeper and produces more destruction at a distance from the point of application of the soldering iron. It is quite possible that Dr. Clark's method accomplishes the same thing and in a much nicer way than the soldering irons do. The mortality among these patients when operated on early is practically nil; when operated on late, death in the earlier group of cases was either from shock or from pneumonia. We thought that our successful cases depended on the fact that we destroyed the growths to a very great distance from the originating point and that we held the red hot soldering iron in position for a considerable period of time, that is, we do not brush it back and forth, because in that way you do not reach the depth, so that boiling of the tissue has seemed to be of especial value, and especially so in the cases that are seen early. Of course, these patients do not come to the general surgeon as early as they do to the dentist, so that it is rare that we see a real early case of malignant growth of the jaw. In the last three years we have used the roentgen ray in all cases and radium in a considerable number of cases. In the cases of circumscribed osteosarcomas we have excised the jaw. In the carcinomas we have not done this, but we have cauterized very deeply. In malignant polypus of the antrum we have found many cases that have been treated for a long time on the supposition that they were due to infection of the antrum, and the patients have come late for that reason. In cases of that kind, in which we removed the eye at the primary operation, we have had permanent results. In cases in which we have tried to save the eye we have not succeeded.

DR. BERTHA VAN HOOSSEN, Chicago: For three years I have had encouraging results from the use of emetin in the treatment of malignant disease. I have never seen a case of malignant disease of the jaw where the patient did not have pyorrhea or badly-diseased gums. Emetin seems to produce a fibrosis. I have at present two patients who, without any operation, are practically cured of malignant disease. One has a squamous cell carcinoma of the labia. The other has a very extensive medullary carcinomatosis and has made wonderful improvement.

It seems to me in the inoperable cases Dr. Clark might succeed in localizing the disease and making the surrounding tissues more healthy, by starting up a fibrosis, using at least five grains of emetin the week before his treatment is begun. Thus he might make it successful in every case instead of the small percentage reported.

DR. ROBERT ABBE, New York: It is not through the blood stream, except where the blood stream has been infected and the metastatic particles are carried in it, but through the lymph channels that we are bound to search for absorption. We have to reach the original infection, and heat, roentgen ray and radium seem to be the agents of choice. That the cells that are wandering away from the lymphatics are more sensitive than normal malignant cells has been proved by biologic study. By electronic action one can produce either a slight or a very marked arrest of growth, or a destruction of those cells. The heat method is one by which the cells in some definite area are arrested, destroyed or absorbed. The heat can be driven into these cells, if we go far enough. There is no question but that the lymphatics can be treated at a distance. In the cases of cancer of the mouth spoken of by Dr. New, it seems to me that the question of tobacco as a cause is absolutely proved in nine cases out of ten. If you ask the question of these patients you will find they have smoked to excess three to five cigars a day or a corresponding amount of tobacco in any form, and where the quid is carried in the cheek it is a cause of carcinoma of the buccal site. Dr. G. H. Davis proved that in the Philippines chewing of the Betel leaf was the cause of carcinoma of the inside of the mouth. I believe we can state that tobacco is the cause of most cases of carcinoma inside of the mouth.

DR. WILLIAM L. CLARK, Philadelphia: The success obtained by the use of the desiccation and electrothermic coagulation methods in the treatment of cancer is explained by the fact that the malignant tissue was all destroyed, and when possible with one radical treatment, while at the same time blood and lymph channels were sealed.



In cases in which, by error of judgment, some of the diseased tissue was not destroyed, recurrence was the rule; indeed, owing to the stimulation of the electric current, the disease often manifested greater activity than would have been the case if left untreated. In cases of recurrence, however, the electrothermic methods have often been applied twice, or even a number of times, before final success was attained, but the practice of intentionally treating a malignant lesion in a series of electrothermic operations is a reprehensible one, and must be discouraged in no uncertain manner. It is quite as irrational to do this as to excise a cancerous growth surgically in a series of operations with the hope of success. The term "fulguration" is applied in the United States to any type of high frequency spark that will cause the destruction or burning of tissue. Fulguration used in this sense is a misnomer, since the original deKeating-Hart fulguration method does not destroy tissue, but is applied to the field of operation after radical surgical ablation of cancer in the form of long high-tension sparks, not for the purpose of destroying tissue, but to alter local nutrition, and it is claimed by Hart, Bainbridge and other advocates, that recurrences are less frequent when fulguration is used in combination with surgery, than when surgery is used alone. I have had insufficient experience with this method to venture any comment on the truth or fallacy of this claim. I may say, however, that the pseudofulguration method employed in this country means little, as the destruction or burning of tissue by any sort of high frequency spark whatsoever is called "fulguration," hence, in the hands of different men, entirely different effects on the tissues may be produced.

The indiscriminate use of the high frequency spark in the treatment of cancer by frequent applications and incomplete destruction has justly brought the destructive fulguration method into disrepute. The term fulguration should be abandoned, except when used according to the technic of deKeating-Hart. On the other hand, desiccation and electrothermic coagulation are descriptive of the actual effects on the tissues, and these effects are produced by definite types of high tension electric currents of known strength, capacity, inductance and resistance, and the methods are so standardized that they may be duplicated over and over again by any physician possessing the requisite appliances and who has learned how to use them.

It is also desirable that the operator should have a good surgical training and a comprehensive knowledge of anatomy.

DR. GORDON B. NEW, Rochester, Minn.: In regard to the point concerning tobacco that Dr. Abbe has brought up: Too much stress has been put on the effect of tobacco as a cause of cancers of the mouth and lip, although undoubtedly there are a large number of cases of cancer in which tobacco is a factor. Among one hundred and ninety-six patients with epitheliomas of the lip treated at the Mayo Clinic during the past twelve months, 33 per cent. did not use tobacco at all. Since this is about the percentage of men who do not smoke, it does not bear out the high percentage of cases in which tobacco is a factor.

### Repairs in Pink Vulcanite

The discoloration always attending the union of new and old vulcanite can be removed by tracing a little nitric or hydrochloric acid over the discoloration. In a few seconds it should be neutralized with sodium bicarbonate or ammonia. The vulcanite will not suffer any damage if care is exercised.—F. W. F., *Pacific Dental Gazette*.

### Some Synthetic Stunts

After selecting a suitable cone-socket handle and eight or ten discarded points, cut some orthodontia band material of fairly thick gauge into different lengths, and soft solder one to each point at an angle of 45 degrees. These small pieces of band material should be made up into an assortment of different sizes and shapes, some flat, some concave, some semi-circular, some "V" shape. The concaving must necessarily be done before soldering. Round all corners. These points will be found particularly useful in applying pressure to a celluloid strip when inserting synthetic fillings in labial and labio-gingival cavities.

—W. H. Savage, *Dental Quarterly*.

THE USE OF HEAT AND RADIUM IN THE TREATMENT OF  
CANCER OF THE JAWS AND CHEEKS\*

BY G. B. NEW, M.D., ROCHESTER, MINN.

CANCER OF THE JAWS AND CHEEKS is one of the most malignant forms of new growth. The type that is primary in the cheek is probably only exceeded in its malignancy by the melano-epithelioma. Little is known regarding the causation of such growths except that chronic irritation of some sort is believed to be an important factor, and, this being true, every snag of tooth or any other source of irritation should be eliminated from the mouth as a prophylactic measure. While tobacco may be a cause in some cases, it probably has not so much importance as is usually attributed to it. The man with cancer of the cheek who chews tobacco has, as a rule, carried the tobacco on the unaffected side of the mouth. Syphilis is undoubtedly a factor in the production of cancer of the tongue, but is of no demonstrable consequence in relation to cancer of the jaw and cheek. Papillary leukoplakia frequently develops into epithelioma, and it should be thoroughly treated with cautery and radium.

Fifty-seven cases of cancer of the jaws and cheeks were examined at the Mayo Clinic during 1917. Thirty-two of the patients were inoperable; four had glandular involvement, but operation was considered advisable and a block dissection was done in addition to the treatment of the local growth. Twenty-one had no glandular involvement and were treated with the cautery and radium. Data concerning these twenty-one patients form the basis of this paper. In most instances epitheliomas occurred in the fifth decade. There were two patients between 31 and 40 years of age; four between 41 and 50; twelve between 51 and 60, and three between 61 and 70. Nineteen were men and two were women. The patients had first noticed the trouble from two weeks to four years before they came for examination, but it was difficult to determine the length of time the growth had been present or active. The tumor was located on the lower jaw in two cases, on the lower jaw and cheek in seven, on the upper jaw in two, on the upper jaw and cheek in seven, and on the cheek in three. Five of the twenty-one patients had been operated on before coming to the clinic. Seven of the epitheliomas were associated with, and apparently had originated in a leukoplakia. In one case, the tumor developed on a pathologic fracture of a bone cyst of the jaw.

\*From the Mayo Clinic.

\*Read June, 1918, before the Section on Stomatology, (A. M. A.) of which THE DENTAL SUMMARY is the representative organ for the dental profession by special arrangement.



## TREATMENT

In reviewing the literature, it is seen that the usual method employed in the treatment of cancer of the jaws and cheeks has been a complete or partial resection of the jaw with some type of plastic operation if the growth involved the cheek. Recently the cautery has been used in the treatment, but I have been unable to find any report in the literature of a group of cases treated in this manner. At the Mayo Clinic the cautery has been employed for several years in the treatment of such cancers, with a few exceptions, in preference to resection of the jaws. In many instances, the radium has been used following the cautery.

During the year 1917, all the patients operated on were treated by the slow heat cautery with soldering irons, and, in addition, radium was used. While a report of recently treated cases of cancer must necessarily be only preliminary, nevertheless the results have been very encouraging, and I feel that we have obtained better immediate results than were obtained previously in the treatment of cases of this type.

In cases of cancer of the jaw or cheek without glandular involvement, the decision as to whether or not they are surgical depends on individual judgment, but in any questionable case the patient should be given the chance an operation may afford, and everything possible should be done for him.

Before operation, patients are advised that they must return for observation at least once a month during a period of six months or more following operation, so that they may have immediate care, if there is any recurrence. When the seriousness of the condition and the necessity for co-operation is explained, it is usually not difficult to get patients to return at stated intervals.

## TECHNIC

After the patient is anesthetized with ether, a mouth gag is inserted opposite the affected side. The tongue is drawn to one side out of the way, by the aid of a stomach elicker. The water-cooled speculum is inserted, and all the teeth in the area involved, or those that prevent good exposure of the growth are removed. If it is possible, the entire growth is excised from the jaw or cheek with a knife cautery, and the base is cauterized with soldering irons. If this is not possible, the irons are inserted into the tumor. The water-cooled speculum prevents the burning of the lips or cheeks except in the area being treated, and it affords good exposure. A wooden tongue depressor holds the tongue out of the way and prevents it from being burned. The cautery should be used longer than seems really necessary; at least for from twenty to forty-five minutes. If the growth is in the upper jaw and involves the antrum, the soldering irons are carried up into the antrum and the entire growth is gradually burned away.

Soldering irons are found to be the most satisfactory type of cautery, as the heating element in the handle of the electric cautery usually interferes with a good view of the area that is being treated. If the irons are too hot, the surface cauterized becomes carbonized and prevents the penetration of the heat. A slow heat that gradually cooks the tumor is preferable.

Occasionally hemorrhage will occur during the first ten days or two weeks following the cauterization while the slough is clearing off and, if it is not readily controlled by packing, ligation of the external carotid with the lingual and facial branches is advisable.

About two weeks after the cauterization, most of the slough will have cleared off, and radium may be applied directly into this open area. It is directed into the ulcerating area on lead applicators, using a 50 or 100 mg. tube within a silver tube, for from fifteen to twenty hours, without screening. If the growth has involved the cheek, radium is applied with screening externally over the cheek, thus cross-firing. If the growth has involved the antrum, the radium is placed in the antrum, packed there with petrolatum gauze, and left in place for the period of hours required by the particular type of lesion.

In from a month to six weeks after the operation, large pieces of sequestrum usually come away from the jaw. These pieces are sometimes one-fourteenth to three-eighths inch thick. In a month from the time the first radium treatment is completed, further treatment is given and repeated as often as the condition indicates. If there is any recurrence noted a second cauterization is done, and this is followed by radium.

Epithelioma of the jaw does not, as a rule, metastasize early, unless there is considerable involvement of the cheek. In such a case, the submental and submaxillary glands on the affected side should be removed.

#### RESULTS

Of the twenty-one patients treated, twenty were traced; of these, fourteen have been free of local recurrence for from six to eighteen months. One patient recauterized three months previously, thus far has no recurrence. One died of lymphatic leukemia six months after operation; there was no recurrence. Two of the fourteen patients (one with epithelioma of the cheek and one with epithelioma of the upper jaw and cheek) have developed glands of the neck and have had block dissections. Thus twelve of the twenty patients have had no recurrence locally or in the glands for from six to eighteen months. One patient has a hopeless local recurrence. This patient was operated on before coming to the clinic. Two patients died of the cancer; one of these had been operated on before coming to the clinic; one consulted a plaster doctor, and his present condition cannot be learned from his letter. There was no operative mortality.

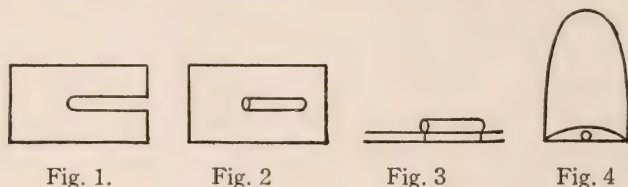


This group of cases shows that our immediate results in the treatment of epithelioma of the jaws and cheeks without glandular involvement, by the use of the cautery and radium, have been very encouraging. The end-results cannot be foreseen, but we believe that by the addition of radium to the treatment, much more is being accomplished than formerly.

### A DETACHABLE CUSP FOR STEELE'S FACINGS\*

BY M. G. PHILLIPS, D.D.S., CHILLICOTHE, OHIO

A very simple and practical method of making a detachable cusp for the Steele facing is as follows:

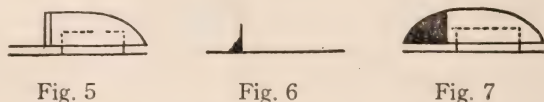


*Fig. 1.*—Extra backing to which the gold cusp is attached.

*Fig. 2.*—Regular backing also made by hand and backing pliers, but made over No. 1 to allow for extra space taken up by the extra backing.

*Fig. 3.*—No. 1 and No. 2 complete except the cusp.

*Fig. 4.*—Facing ground to accommodate the cusp.



*Fig. 5.*—Ground facing with backings No. 1 and No. 2, with gold strip abutting ground surface of facing and tacked with wax.

*Fig. 6.*—Backing No. 1 ready for investing and soldering in the cusp.

*Fig. 7.*—Backings, cusp and facing completed.

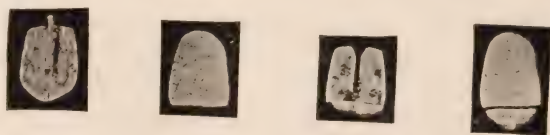


Fig. 8

Fig. 9

Fig. 10

Fig. 11

*Figs. 8, 9, 10, and 11.*—Are from photographs of three parts of the finished facing, showing the parts as they appear separately and assembled.

\*Clinic, Ohio State Dental Society, Dec., 1918.

THE PREPARATION OF BRIDGE ATTACHMENT  
FOR VITAL ANTERIOR TEETH\*

BY C. H. SCHOTT, D.D.S., CINCINNATI, OHIO

THE CLINIC I have to show is an attachment for vital teeth, and although the idea is not a new one, I am promoting something which I believe enables us to avoid devitalizing. Although there is a growing sentiment against fixed bridges, I believe there are certain instances, as when we have a lateral incisor requiring to be replaced, or a lower central incisor—a common class of cases—when the teeth adjoining the space or spaces are still in position, and are sound and firm, this method is available. Thus often we will have a lower incisor lost through pyorrhea, the remaining teeth being unaffected. In case the patient has not an inherited susceptibility, this method is many times valuable.

This method is especially desirable since we are able to save the pulp alive. We have all of us heard so much and read so much about pulp involvements, about the impossibility of inducing normal conditions, that most of us are convinced of the necessity of avoiding interference with the pulp, and that adds emphasis to what I am about to present.

Dr. Thos. Hinman presented a similar attachment at a clinic, in Cincinnati, a few years ago. I do not recall having seen more than three or four cases in all, where this attachment was used. It is possible to supply as many as four anterior teeth, in this way, and you have a sanitary, cleanable bridge.

Dr. House yesterday presented for your consideration, this subject of the importance of preserving pulps alive, and further emphasized the possibility of preserving the pulp under attachments properly constructed. This attachment I am here showing, is not difficult to make; it requires however, due study and careful technic.

These models show bridges of this description which have been in position a number of years, and the conditions have remained comfortable all that time. The important feature is to instruct the patient how to keep his mouth and the bridge clean, which few understand how to do.

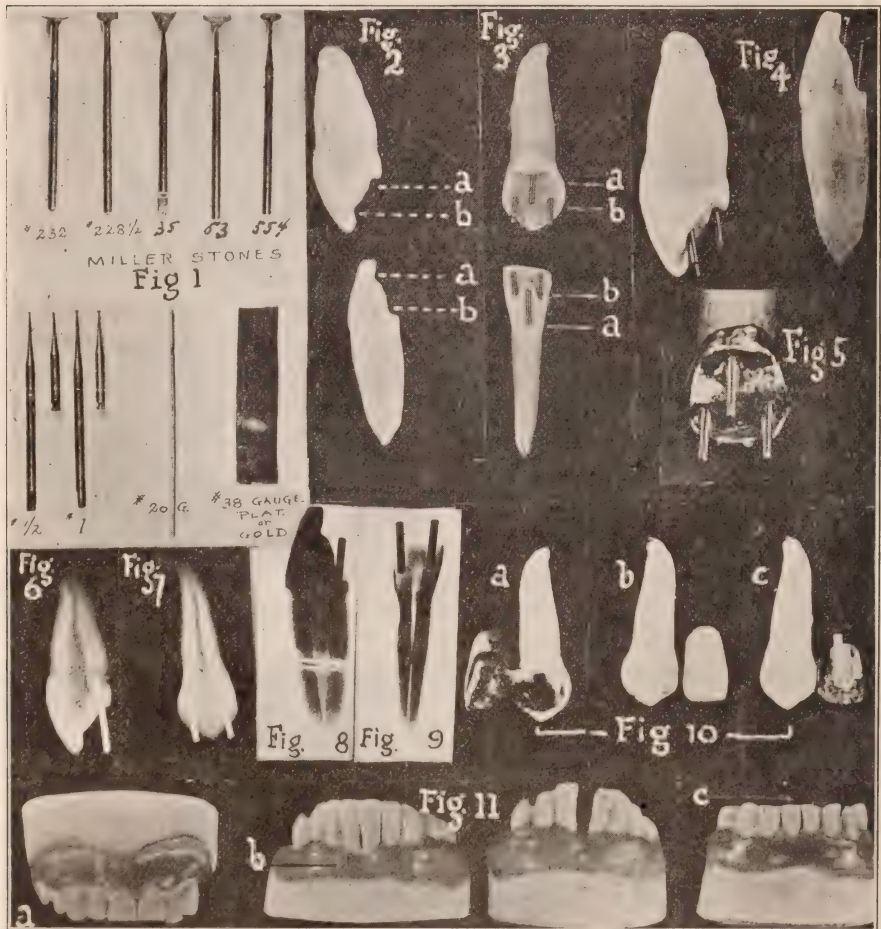
My method of making this preparation is as follows: With Miller stones, Nos. 232, 228½, 35, 53 and 554, cut two grooves mesio-distally across lingual of tooth as shown in illustration (*Figs. 2A and 2B*) follow this by cutting down tooth between the grooves to allow for thickness of backing when re-enforced, as shown in illustration. (*Fig. 2.*) With No. ½ followed by No. 1 round bur, drill into center of groove nearest

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\*Given before the Ohio State Dental Society, Dec, 1918.



cervical and lingual to pulp to the depth of 2 to 3 mm., always being careful to parallel drill with the pulp, making the opening about half-way between periphery of the tooth and the pulp. Place a piece of 20-gauge iridio-platinum threaded wire into opening allowing an equal length to extend outside of the opening in the tooth. (Fig. 3A.) For the reception of other two posts, now drill into the groove nearest the



incisal edge, drilling as near as possible about half-way between the periphery of the tooth and the pulp, drilling both distal and mesial to the pulp and place posts (Fig. 3B) aligning same with lingual post. (Fig. 4.) Remove posts and burnish piece of 38-gauge soft platinum over tooth and well into the grooves to seat same. With sharp-pointed instrument punch through the platinum backing and place iridio-platinum post (Fig. 5), burnish backing again, then take impression with Kerr's pyramid-shaped modelling compound points heated at the end over

flame; chill compound and remove, taking backing and posts away with the impression. Invest in Brophy's Imperial Investment Compound, and after drying out, tack posts to backing with pure gold or 22k solder. Place backing on the tooth again and burnish; you are now ready to take the second impression for re-enforcing, although this is sometimes unnecessary, as re-enforcing can be done when the bridge is being made on the final model. The accompanying illustrations, *Figs. 6, 7, 8 and 9* are radiographs showing the relation of posts to pulp. *Fig. 10* shows attachment for single tooth; *Fig. 11A* shows supplying of lateral incisor to cuspid; *Fig. 11B* shows restoration of four lower incisors attached to two cuspids and *Fig. 11C* shows lower central attached to lateral and central incisors.

Neave Building.

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### DENTAL EDUCATION AND EXAMINATION, BY AN EX-EXAMINER

BY H. C. SEXTON, D.D.S., SHELBYVILLE, INDIANA

**T**HAT DENTAL STUDENTS are not students in the proper sense of the term is evident to anyone who has knowledge of what really constitutes study. The lack of method or rather the adoption of wrong methods is appalling. Instead of the student being treated as an intelligent man and being taught to study, he is treated as a mental defective would be treated, and great but misdirected efforts made to pound ideas into his head mechanically, by iteration and reiteration in lectures.

These are serious statements to make but I am sure that in making them I am stating only the truth. Dental education today partakes largely of the farcical.

Benjamin Franklin very truly says that the best part of any man's education is that part that he digs out for himself; and it is true. Unfortunately the dental student of today digs nothing out for himself. So many thousand words are fired at him per week in the hope that a small percentage of the knowledge will stick; little of it does stick because there is no effort on the part of the student; it is all too mechanical, too artificial; he does not dig for himself. Consequently about ninety-nine per cent. of the facts or ideas he hears uttered go in one ear and just as readily go out the other.

The lecturing system of education in dental colleges as applied to most of the subjects is a fake, a snare, and a delusion.

For instance take the subject of anatomy. An M.D. ordinarily will be the lecturer and several times a week he will stand before the class and recite, parrot-like, a lesson he has learned by rote. It has done the lecturer a great deal of good, for in order to recite he has had to study; but the student is seldom or never called upon to recite and consequently



he derives no benefit. So far as good to the student is concerned the lecture might just as well be given by a talking machine.

The only way to attain knowledge is to put your mind upon one small part of the subject after another, acquiring each part perfectly before you advance to another part, and being required to recite on each part for two reasons: *First*, for the effect of pounding that knowledge into the mind; *second*, that the teacher may be sure each day that the knowledge really has been acquired. In case of failure he corrects and reproves; in case of eminent success he stimulates the whole class by his commendation. Every day should be, in a sense, an examination on the part passed over before proceeding to fresh ground. The man who does all the talking now, the lecturer, should be made to keep quiet and let the student do the talking; he should drop his lecturing and go to teaching—real teaching.

It is in scientific teaching that dental college lectures are so lamentably lacking. A lecturer ordinarily is selected for the reason that he has been successful in some phase of practice and is before the professional and public mind. Just as if success in practice gave a man ability to teach! What a farce it all is! He may not know the first rudiments of pedagogy.

To teach in our kindergartens and in the common grades in our schools much study of the profession of teaching is required; to teach in a high school more is necessary, yet to teach in a professional school of dentistry no knowledge at all of the teachers' art is required. What is required? Simply that a man be able to talk. As if the talkers were always the wise men! As if the talkers were always teachers!

As a consequence of all this dental students are not students; they are simply listeners and generally bored listeners. They never have been taught to use their own brains. What little education they get comes vicariously.

Instead of the lecturing system in dental colleges being an advance in educational method over the common or high school method of instruction, it is a degeneration, a going backward.

There are cases in which the lecture system is commendable. For instance when an eminent practitioner has originated methods of work of his own that are not given in text books; his knowledge can then be given in no other way. But in ordinary instruction in such subjects as anatomy, general and dental, physiology, histology, chemistry, bacteriology, operative and prosthetic dentistry, and materia medica, the lecturing system is out of place and well could be replaced by assigned lessons in text books and recitations every day.

In all these subjects there are excellent text books written in good English and divided and subdivided into chapters that are most helpful. Isn't it folly to maintain that a man who professionally is, in all likelihood, inferior to the author of the text book, can stand up and deliver

offhand, extemporaneously, a lecture that is superior to the studied, arranged, criticised and recriticised work of the careful author? But that is not all. Even were the spoken exposition of the subject as good as the written, it would not instruct as well, for the reason that with the written words one can go over and over a difficult part until he is sure he has it firmly fixed in mind. Lecturers, even if they be machine-like, as most of them are, cannot be similarly stopped.

In our dental colleges of today text books are required but they are given an inferior position to the professor who lectures. The situation should be just diametrically reversed. The text book should be studied first and the peculiar or personal ideas of the professor subordinated. In other words lecturing should be dropped and teaching begun.

One dental *student* who had listened for two years to anatomy lectures gave the following answer to the question, "What is the purpose or function of the Eustachian Tube?"

"It is to squirt saliva into the mouth."

Truly a brilliant example of the product of the prevailing lecture system of instruction in dental colleges!

There are other ways in which the dental college might be more helpful to the student. A professor in one of them recently said to me: "The reason a number of our graduates fail every year before the state examining board is that they are placed in an exciting, strained situation to which they are unaccustomed. They get nervous and go to pieces."

"That is true," I replied, "but the fault is yours. Every few weeks during his last year you should give the dental student just such a test as we give—require the same work, in the same time and throw him upon his own responsibility to do it. You know the test is coming, yet you utterly fail to prepare him for it. After standing such a test a few times the nervousness of the worst of them would disappear."

"I never will consent to give a student such a time test," the professor replied with decision. "Throughout all their course our students are taught to do everything their best, utterly ignoring time. To give a test such as you give we would have to reverse, in fact, disavow, our whole method of instruction and place speed first. It is wrong."

"To put in one gold filling and one amalgam filling in a day of nine hours," I replied, "is hardly placing stress upon speed, you must acknowledge. If he doesn't learn to work faster than that your graduate never will make his living practicing dentistry. When an applicant fails through nervousness and excitement the college is at fault; it should have trained him to be equal to just such a test. That is one object of its existence."

At the close of our discussion we each retained our original opinions and I for one still hold I am right.

There is one change I gladly would see made in the requirements in practical work before the Indiana Board—eliminate the gold-foil filling.



It is out of date, rarely used in modern practice, and to require from the graduate a piece of work he would not do in practice is an outrage—nothing else. The modern porcelain filling should be substituted. This has been done in some states. In this respect Indiana lags behind.

Another matter I wish to speak of, a matter in which the profession should take a hand and jealously guard its own interests. The examining board has a double purpose in being: *First*, it protects the public from an influx of incompetent practitioners, and, *second*, exercises over dental colleges a restraint and a stimulus to effort. Dental colleges are, sad to say, most of them, private, money-making institutions; their first object is to pay satisfactory dividends. A state examining board is in the nature of a police power placed over them.

The point I would make is this: No dental college, no official of a dental college, should be allowed to dictate either the policy of the board or who shall constitute its personnel. Such a situation leads to misuse of power and such a situation exists in Indiana. As it happens a trustee of the college and president of its board has for years appointed a member of the examining board of the state. At the very next session of the legislature this should be changed.

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### NITROUS OXID-OXYGEN ANESTHESIA FOR DIFFICULT EXTRACTIONS\*

BY H. R. FRANCIS, D.D.S., TOLEDO, OHIO

**I**N THE HISTORY of dentistry, extraction of teeth is the oldest and most feared dental operation. Still, the average dentist has given less thought and study to anesthesia for the elimination of fear and pain and the technic of this operation, than any other dental procedure. With the rapid advancement in other branches of our work, is it not reasonable to expect that this should receive the same consideration and be kept astride with progress?

Extraction cases, in many instances, are of the greatest importance, requiring the same consideration as any other surgical procedure, for the reason that success is hoped to produce important curative results and failure may result in great injury to the patient.

The dental surgeon in his anesthetic practice is at a great disadvantage in many respects as compared with the surgeon. As the majority of extraction cases are of the nature of emergency operations, the anesthetic must be more or less of a corresponding character, therefore, he is often called upon to administer anesthetics in the absence of any previous preparation of the patient, being forced to place his reliance wholly upon the anesthetic agent, supplemented as far as possible by the application of suggestion and his skill in administration.

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\*Read during the Fourth Annual Meeting of the Interstate Association of Anesthetists, in conjunction with the Indiana State Medical Association, Claypool Hotel, Indianapolis, Ind., September, 25-27, 1918.

In selecting an anesthetic agent for extraction operations, it should be one that will produce anesthesia in a reasonably short time, insure a rapid recovery following its withdrawal, and exert no harmful effects upon the vital centers and organs of the body. In nitrous oxid-oxygen, we have an agent which fulfills these requirements. Being practically non-toxic and non-irritating, it is possible to administer it with comparative safety to patients with diseased organisms without increasing the pathological conditions. It is the safest and most flexible anesthetic in the hands of a skilled operator, and history has proven that nitrous oxid alone has been remarkably safe employed by even the inexperienced. It has been condemned mainly by those who are pessimistic of all things progressive, and those men whose entire instruction was obtained from the salesman who sold them a gas apparatus.

There have been numerous and varied developments of anesthetic agents since the discovery of nitrous oxid, but the psychic, as well as the pathological conditions govern the employment or enhance the value in many instances, whereas nitrous oxid-oxygen anesthesia is limited practically by the skill of the anesthetist and will reward the efforts made to master its peculiarities with the most universal success and satisfaction.

The essential requirements in the administration of nitrous oxid-oxygen anesthesia consist in the ability of the anesthetist to determine the proper mixture of gases according to the requirements, also learning to diagnose the various planes of anesthesia, and employing a machine capable of developing the possibilities of this form of narcosis. In the majority of cases, anesthesia will be maintained with about 93 per cent. nitrous oxid and 7 per cent. oxygen. However, there is no set rule. We had one case requiring 45 per cent. oxygen. Nitrous oxid is very evanescent in its effects, requiring only a few inhalations one way or the other, to allow a patient to regain consciousness, or to be plunged into a condition of collapse. This explains the necessity of a refined technic.

Patients are not all affected in a like manner by anesthetics. Environment, occupation and habits exert governing influences upon the results obtained. The class of patients who tax the skill of the anesthetist are the alcoholics and the extremely nervous. When it is necessary to deal with such patients, the administration of a preanesthetic hypnotic is found very advantageous. We rarely employ hypnotics in the office however, on account of the short period usually required for the operation, and the long period for recovery.

In extraction operations, we generally operate in a dental chair, and as a good anesthesia will not be maintained with an obstructed air passage, it is very essential that the head be in a correct position, that is, allowing the neck to follow the long axis of the body. If the head be too far back it allows the saliva to flow back into the throat, causing a desire to swallow, resulting in restlessness during the induction stage,



and is usually followed by nausea. If too far forward with chin nearly resting on chest, it will interfere with respiration. Caution also should be exercised against long-continued pressure, without interruption, upon the lower jaw while operating.

When the patient is in correct position, and the mouth has been examined, removing all loose dentures, adjust the nasal inhaler with the exhaling valve open. Instruct the patient to breathe through the nose in the usual manner. Allow the gas to flow sufficiently to force it to the inhaler, adjust the mouth prop, and when everything is running smoothly, place rubber cap over the mouth. The flow of gas is gradually increased, and more tension placed on the exhaling valve spring, which forces the blood to take up a greater volume of nitrous oxid. Anesthetics should not be administered too rapidly, at the same time, watchfulness should tell us the different conditions, and allow us to quickly pass over the excitement stage. When ready to operate, the exhaling valve should be screwed down tight, and the pressure of gas from the machine increased sufficiently to compress the gas in the nasal passages and force the soft palate down upon the dorsum of the tongue, preventing the patient from breathing through the mouth. If this is not sufficient, increase the pressure still more and exclude the air by blowing the gas out of the mouth, or use the mouth hook. However, a more economical method is to pack the back part of the mouth with gauze. The gauze method is preferable as it also prevents teeth, or parts of teeth, fillings, blood, and debris from going back into the throat and being swallowed, or inspired into the lungs, causing no end of trouble.

There are two general classes of abnormal cases of extraction—the malposed and malformed teeth. We often find a combination of both classes in a single case. In the malposed class are found the impacted third molars and upper cuspids. This type of case is often complicated by some distorted shape of the tooth, caused by force in its attempt to erupt. In the malformed class are the teeth in which stimulation of the peridental membrane by infection or pressure, has caused an excessive amount of cementum to be deposited on the roots, resulting in an abnormal development or hypercementosis.

The technic for extraction should be divided into two parts: *First*, loosening the tooth; *second*, removing the tooth from the socket. This procedure should be followed in all types of cases, from the simplest to the most difficult. If all teeth were normal in shape and position, very simple technic would be required, but unfortunately their condition can seldom be determined until the tooth is out. We may resort to every device intended to assist us in determining the character of the tooth to be removed, but a great deal of uncertainty usually remains, and it is advisable to follow any plan that may help us to avoid the danger of accident.

The method which I employ for the removal of lower impacted third molars is as follows: With a blunt dissecting instrument, dissect the gum tissue, exposing the bone; then employ a drill in a strong engine at a low speed. Insert it on the buccal side along the axis of the root, remove and insert it again slightly at the side of the first hole made, then connect the two canals. Follow this procedure until the socket is enlarged two-thirds the circumference of the tooth. Insert an elevator and loosen the tooth. If the socket is not large enough to permit of the removal of the tooth, enlarge the socket with a surgical bur, or half-round chisel. With this method, the minimum amount of bone is destroyed. The severity of these cases depends entirely upon the degree and depth at which the tooth is lying, also the density of the surrounding bone.

There are many other types of teeth which present greater problems for their removal than those that are impacted. For instance, a lower first or second molar in the mouth of a middle-aged patient. The tooth is very firm to the touch, and there is no soreness. X-ray reveals a blind abscess, also hypercementosis of the roots. History: Tooth devitalized twenty or more years before, which means the tooth was devitalized before the texture of the tooth had become dense, and it will be found that it is in the same condition now, only in all those years it has dried out and is exceedingly brittle. There is no peridental membrane remaining. It is like an impacted tooth due to fusion. Such a tooth usually presents an exceedingly difficult problem to remove.

A method for removing such a tooth is to try to luxate with a molar forceps, which will include the body of the tooth between its beaks. If this is not possible, the next step is to separate the roots. For this, I employ a pointed elevator, introducing it at the gingival between the roots, and by a slow rotary movement, force it inward and downward. This removes the septum of bone between the roots, and occasionally one or the other of the roots will be loosened. If, however, neither root is loosened, introduce a flat wedge-shaped elevator between the distal root and molar, slowly working it downward, forcing the root into the space made by the pointed elevator, then repeat the method on the mesial root. Great care must be exercised not to encroach upon the teeth not to be extracted.

In conclusion, I would urge anyone in doubt to improve his technic and knowledge of application, for the object after all in our life work, is service—the best we can do for our general uplift, and for the good of humanity, whom we have the honor to serve.



## THE USE OF APPLIANCES IN THE TREATMENT OF INJURIES OF SOFT PARTS OF THE FACE AND MOUTH\*

BY MAJOR V. H. KAZANJIAN, D.M.D.

HARVARD SURGICAL UNIT

### NASAL SUPPORTS (CONTINUED)

No matter what part of the nose has been destroyed, whether soft tissue or substructure, it is advisable to hold the remaining parts in a normal position during the period of scar formation.

At times the injury permits of internal support to the nasal tissues. If external support is indicated the gutta-percha headgear with its facial wire arch offers a suitable basis for the attachment of appliances.

When the soft tissues of the nose are wholly or partially intact, but the bony destruction beneath has allowed collapse, wire extensions cov-



Fig. 28.—A headgear and facial arch carrying a nasal support. A wire fork covered with dental gutta-percha is introduced to the nostrils, and fixed firmly to the arch.

ered with modelling composition, dental gutta percha, or vulcanite are attached below by screws to the facial arch, and passed upward through the nostrils. (*Figs. 28 and 31.*)

The curve and shape of these extensions are made to conform to the part requiring support. They are fixed; but if a gradual force is desired then a sort of fork is attached to the facial arch, passed into the nostrils,

\*Continued from March Summary, page 233.

and raised by elastic bands to the vertical wire which passes over the nose. (*Fig. 29.*)

Pads, or "fingers," consisting of gutta percha or vulcanite at the end of a wire extension, may be used on different parts of the face, but especially at the sides of the nose, to offset scar contraction and sagging of tissues. These may originate either from the headgear or from the arch. (*Figs. 30 and 31.*)

*Additional supports.* At times a wound gapes open to an exaggerated size when a simple support will aid its healing materially. To overcome

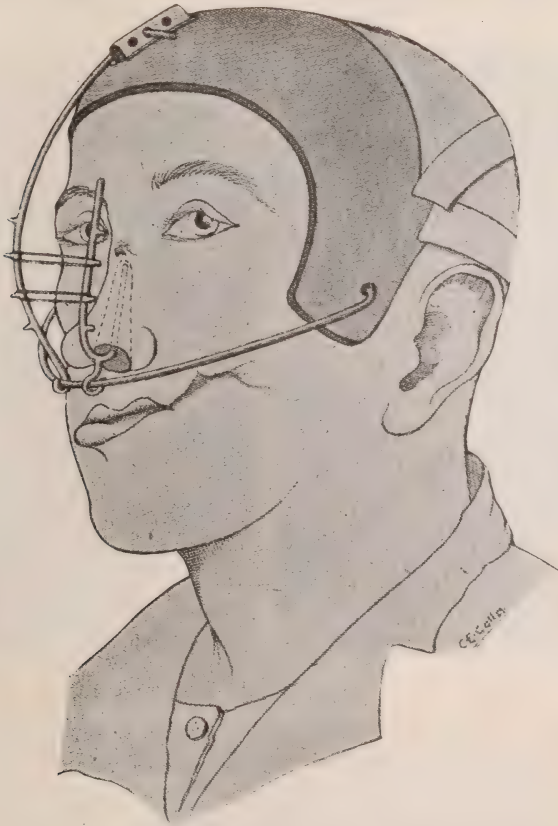


Fig. 29.—A nasal attachment designed to give gradual upward pressure by means of elastics operating between the nasal fork and the median wire of the headgear.

this condition heavy gauze (as used for plaster of Paris bandages) is provided with a row of ordinary hooks, and stuck on opposing sides of the wound with ether-collodion or strong adhesive tape. By means of elastic tube or silk ligature the wound may be overlaced in a manner to bring the edges nearly to apposition. This procedure is more effective, and much less complicating than that of giving a general anesthetic for passing a few temporary deep sutures through the tissues. (*Fig. 32.*)



## APPLIANCES PREPARATORY TO PLASTICS

Appliances may be indispensable to a successful plastic operation. Their objects are to act as a support to the tissues and to replace lost hard substructures. There are many different opinions as to the proper time to operate during the course of treatment, but it cannot be too emphatically stated that at whatever stage the operation is undertaken, when there is loss of the supporting tissues, an appliance should be used.

*Upper jaw.* A large number of cases occur which require operation for the reconstruction of the side of the face, the corners of the mouth and the upper lip. A considerable amount of bony destruction may



Fig. 30



Fig. 31

Fig. 30.—Severe wound of the upper part of the face, with comminuted fractures of the floor of the right orbit, right malar process, nasal bones, and maxilla. The nose was completely flattened and pushed to the left.

Fig. 31.—Attachments used in the treatment of the condition illustrated in Fig. 30. Pads or "fingers" support the sides of the nose, the nose is raised by means of a wire extension passing into each nostril and fixed to the facial arch, and a vulcanite splint for the maxilla is secured to the arch by wires which emerge from the corners of the mouth.

have occurred, and therefore it is obligatory to duplicate the deeper structures before suturing is attempted.

Typical appliances for this purpose are vulcanite base plates held in position by the occlusion of the lower teeth, by clasps, or other mechanical devices. Special precautions are taken to have their fulness and shape harmonize with the contours of the face and with the possibilities of the operation. (*Figs. 1 and 33.*)

*Lower jaw.* The types of lower jaw injuries are more numerous and varying and present more complex problems. The destruction may vary in amount, perhaps involving the lower lip only, or at other times including the major part of the mandible and much of the surrounding soft tissue of the face and neck. The appliances must be designed according to the condition of the oral cavity and to the kind of plastic operation to be performed.

*First*, for the reconstruction of the lower lip or lower side of the face where there is no appreciable loss of mandibular continuity, vulcanite

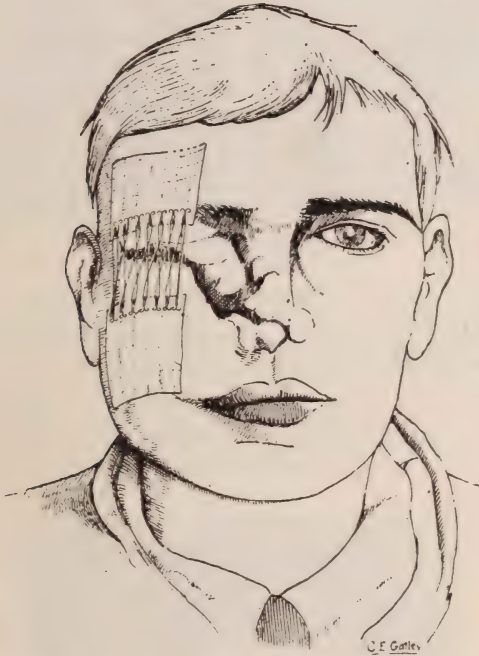


Fig. 32.—Heavy bandage material stuck with ether-collodion to the skin on opposing sides of a wound. A long elastic band, or a silk cord is laced to the hooks to approximate the borders of the wound.

base plates retained by clasps, or vulcanite attachments to band and wire splints are most common and usually meet the requirements. (Fig. 34)

*Second*, in the more extensive cases, where there exists a considerable amount of bone destruction anteriorly and the lower lip and chin are to be restored, the appliances vary according to the availability of lower teeth for purposes of retention. As previously described Figs. 5, 6, 7, 8, 9 illustrate splints on appliances which serve to control the contraction of the soft tissues and now it will be seen that since they replace the missing hard tissue, they also act as appliances over which plastic operations are performed.

There are cases of grave injury which involve the loss of the greater part of the mandible, the chin, the sublingual tissues and even the upper



part of the soft tissues of the neck. (*Fig. 35.*) From the point of view of the prosthetist, the first essential step is the preservation of the remaining posterior parts of the mandible in an anatomical position. This



Fig. 33



Fig. 34

Fig. 33.—An upper plate in position preparatory to a plastic operation on the upper lip.

Fig. 34.—A vulcanite piece similar to that shown in Fig. 5, attached to a band and wire splint in place preparatory to a plastic operation.

must be accomplished at a time very soon after injury while the rami are still mobile, or otherwise, during the process of healing they become grossly displaced by muscular contraction and may become adherent.

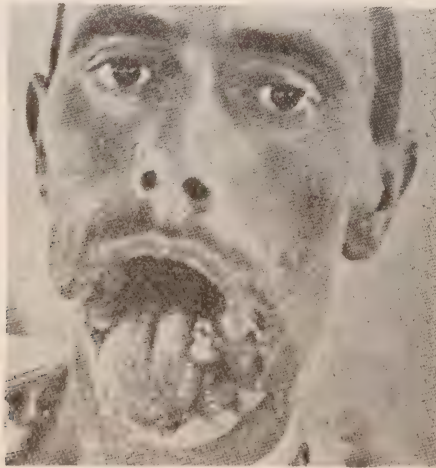
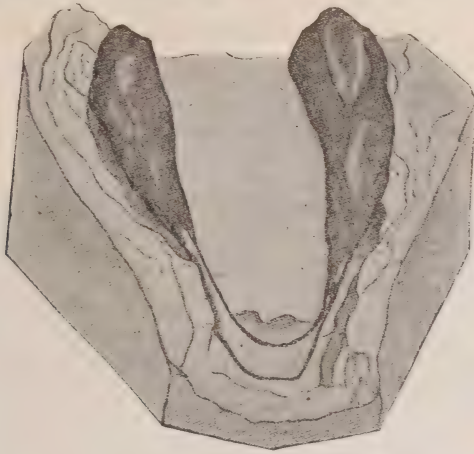


Fig. 35.—Extensive wound and destruction of the soft tissues, of the lower part of the face, with loss of the mandible anterior to the second molar regions. The splint used for the control of the tissues immediately after injury is shown in Fig. 36.

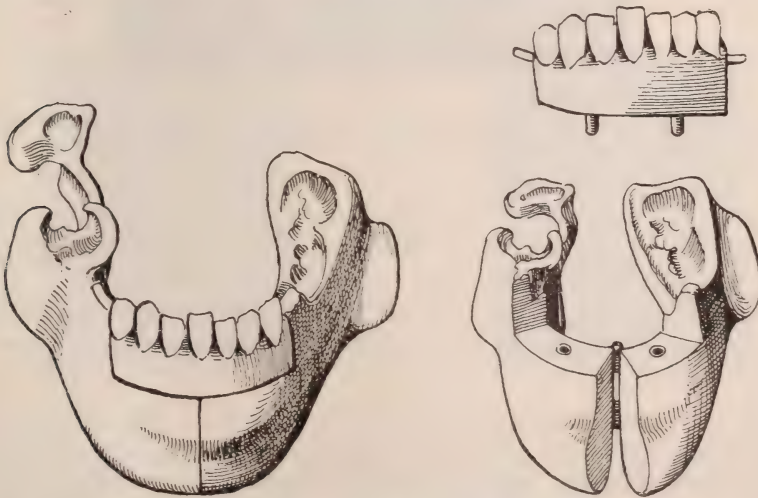
A splint of this type is inserted at an early stage. Thick German silver plate (*Fig. 22, A.G.*) is cut about three-fourths of an inch wide and

bent roughly to the shape of the mandibular arch. To its posterior half modelling composition is added to serve as a sort of inter-maxillary splint at the remaining uninjured area. (*Fig. 36.*) The composition



*Fig. 36.*—A splint for use during the early stages of treatment in cases of the type illustrated in *Fig. 35*, when no lower teeth are available for purposes of retention. It preserves the remaining parts of the mandible in an anatomical position, and also prevents undesirable adhesions at the site of injury.

may be replaced by vulcanite and the splint worn for some period of time while the wound is healing and other appliances are under con-

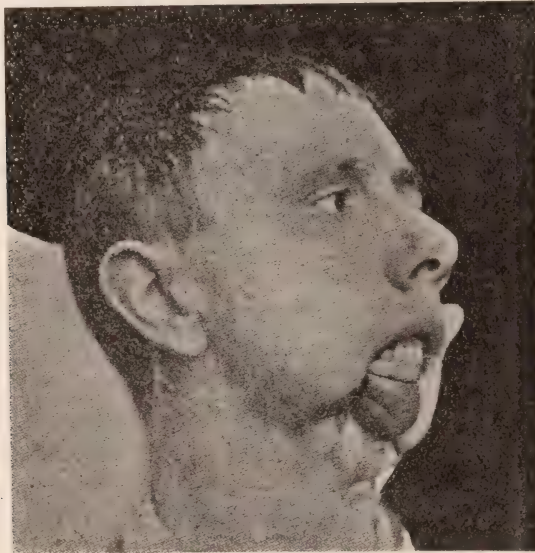


*Fig. 37.*—Appliance used as a substitute for missing portions of the mandible, in the case shown in *Fig. 35*. It is hinged at the middle to allow its collapse and introduction into the mouth, and when spread to position it is locked by the vulcanite section carrying teeth.

struction. It serves to avoid displacement of the rami, and the borders of the vulcanite maintain the buccal sulcus of the alveolus.



The next appliance is designed to reproduce the missing portion of the mandible and to serve as a framework over which the soft tissues can be sutured, and it fits over any portion of the bone and ridge which exists, or is clasped to teeth if any remain. It is hinged at its median line to allow its collapse and introduction to the mouth. Once introduced it is spread to position, and a third section bearing either teeth or occlusal guide is attached by two rods and tubes. (*Fig. 31.*) The whole appliance when in place fits the ridges, gives the necessary con-



*Fig. 38.*—The appliance shown in *Fig. 37* in position. It acts as a splint during the healing of the wound, and later as a framework over which plastic operations are performed.

tour and bulk, and has as accurate occlusion with the upper teeth as possible. (*Figs. 38 and 39.*) Sometimes there is no portion of the lower jaw left on one side, and in such cases a mechanical device is necessary in the molar region to act as a pseudo-condyle and to prevent rotation of the appliance in the mouth. Such a device is shown and described in *Fig. 40.*

In other cases the loss of the mandible is equally extensive in amount but almost unilateral. The sound part of the jaw is kept in normal and occlusal position and an appliance is fitted to supply the missing tissue. It may be hinged and it is kept in position by occlusal guides, artificial condyle, or horizontal springs as is shown in *Figs. 40 and 41.*

#### CORRECTIVE APPLIANCES

Sometimes deformities have already taken place and mechanical devices are necessary to correct them. By the application of gradual

force, it is the purpose to compress contours, expand scars or to overcome alveolar adhesions.

Many ingenious appliances have been designed for these purposes, but after careful consideration one is led to observe that they are un-

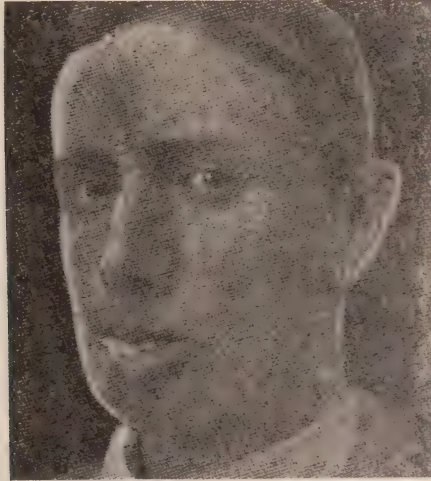


Fig. 39.—A later picture of case shown in Figs. 35 and 38, after the plastic operation was performed for the restoration of the lower lip and chin.

doubtedly mechanical triumphs, but are unadaptable to the surgical requirements.

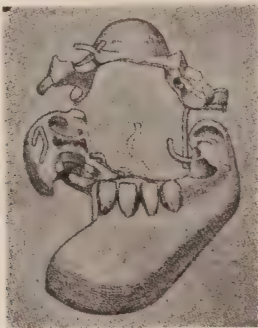


Fig. 40



Fig. 41

Fig. 40.—Appliance designed for cases in which there is extensive destruction of the mandible confined to one side. The lower restoration is hinged at the middle and after introduction to the mouth, is spread and locked by a lingual bar which rotates at one end. To prevent a backward or rotating motion of the plate in the mouth, an artificial condyle is attached, which consists of a bar originating at the palatal surface of the upper molar region of the upper plate, and a curved bar below on the lingual aspect of the lower plate. The upper bar is allowed restricted movement by being adjusted in a small tube while the lower is fixed. The upper bar operates posterior to the lower; and the curves of each are designed to give as free and natural movement to the jaws as is possible.

Fig. 41.—Shows the appliances described in Fig. 40 in place.



If the tissues are subjected to undue pressure, either atrophy or ulceration takes place. It must be remembered that by the application of corrective force we intend to cause a gradual absorption of a tissue with a proliferation elsewhere. If the force is other than physiological, then pathological conditions result.

In instances where contraction and depression of the cheek occur, limiting the mandibular activity and rendering the construction of den-

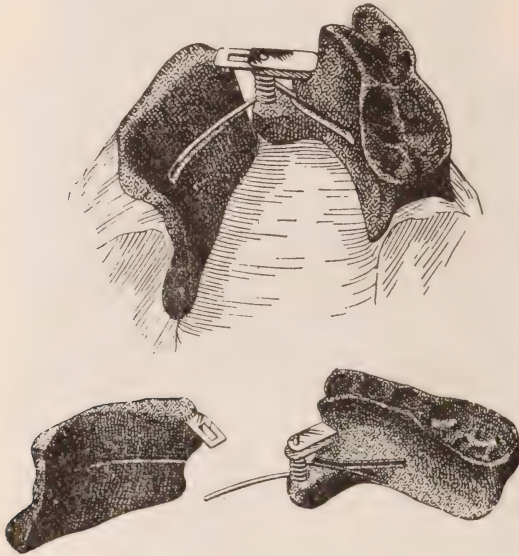


Fig. 42.—This appliance consists of two sections. The right holding the remaining segment of mandible in its normal position, while the left rests against the soft tissues of the cheek and by means of a piano wire spring exerts the required pressure.

tures difficult or impossible, gradual intra-oral pressure may overcome the deformity. If the patient, as part of the general treatment is already wearing a vulcanite splint modelling composition or vulcanite is added beneath the contracted area at frequent intervals until the desired expansion is attained. Another device for the same object consists of a vulcanite wing extended into the buccal vestibule. It operates by a hinge near the median line of the mouth, either from a metal cap splint or from a vulcanite plate and gains its force by a piano wire spring. (Fig. 29.) Different modifications of its constructions are seen in Figs. 42, 43 and 44.

In most cases where a corrective appliance would attain good results after a long and tedious period of use, well-conceived surgical interference *plus* a contemporaneous appliance would accomplish the same end more quickly.

However there are certain instances when appliances are successful if the pressure applied is very gradual, and if the force is distributed over a large area.

The foregoing discussion attempts to describe the conditions which commonly arise in the treatment of patients suffering from gunshot wound of the face and jaw with types of appliances which, after three years of development and test, have proved efficient; and does not touch upon many devices which may be necessitated in unique or individual instances, or in the treatment of injuries of the nose.

In order to facilitate the treatment of a large number of cases both the splints for the fixation of the bony parts and any other appliances must be reasonably simple in construction if the dental mechanic is to gain his maximum efficiency, and quickly adjustable if the attending

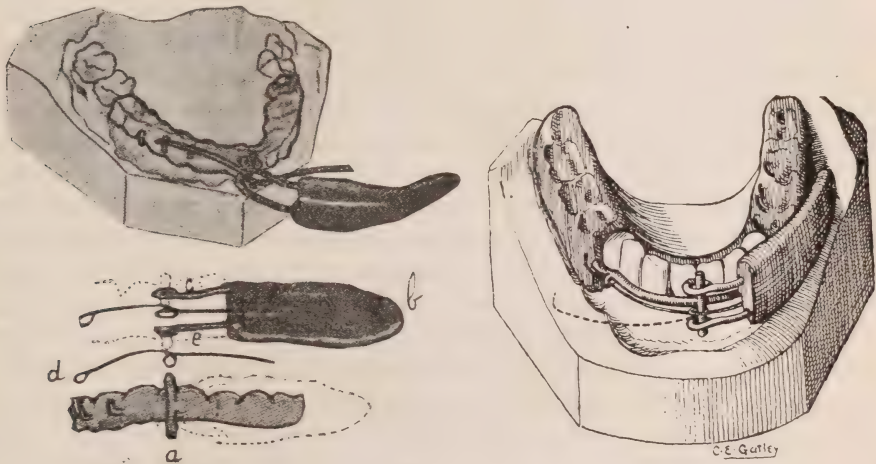


Fig. 43.—A swaged cap splint is fastened over the teeth, and near its center a small perpendicular wire is soldered (a). A vulcanite cheek pad (b), of the size required is made with two wire attachments (c), which loop over the perpendicular bar (a). A spring made of piano wire shaped as shown in Fig. 2, is used to exert a continuous pressure on the cheek pad.

Fig. 44.—The same appliance as the one shown in Fig. 43, except that in this case the cheek pad is attached to a lower denture carrying a labial bar.

surgeon is to meet the demands of a group of patients as well as of the individual.

It has therefore been attempted to reduce the different kinds of wounds—though numerous—to definite and distinct types, with appliances which effectively meet the requirements of each, in the hope that classification and standardization will assist in promoting greater efficiency in treatment.

The appliances above described have passed through many developmental stages and much credit is due my colleagues, Capt. F. Brigham, R.A.M.C. (Harvard Unit) and Capt. C. N. Lewis, R.A.M.C. (Harvard Unit) in obtaining the desired results.—*La Restauration Maxillo-Faciale*.



## RE-TRAINING THE DISABLED MAN\*

BY DOUGLAS C. MCMURTRIE

DIRECTOR, RED CROSS INSTITUTE FOR CRIPPLED AND DISABLED MEN, TWENTY-THIRD STREET  
AND FOURTH AVENUE, NEW YORK CITY

IN THE PAST, our method of dealing with men permanently disabled in the course of employment has been to pay the worker a pension in the form of compensation, and forget him and his injury. But the cost of disability in the field of dentistry has been not alone in premiums paid for casualty insurance. There has been the cost involved in training experience and adaptation of a skilled worker who does not return to his job, and the fitting of a newcomer to take his place.

There are three means of reducing and approaching the complete elimination of the cost of disability: *first*, accident prevention; *second*, thorough medical attention to minimize the disability resulting from the injury; and *third*, salvage of the remaining abilities of the worker through rehabilitation for self-support. The first of these already has received wide attention from employers and has been wisely encouraged in a financial way by casualty insurance companies and state funds. The values of the two latter however, have not as yet been appreciated. Their energetic application would effect a tremendous saving to industry.

Many injuries from which men would recover completely in a short time under adequate and high-grade medical attention are treated for an insufficient time, or by incompetent physicians and, instead of a prompt return to work, the case at best drags along over an extended period and at worst becomes chronic, or develops into permanent disability. Some states require the insurance carrier to provide but two weeks of compulsory free medical attention to the injured man. For the insurance company to take advantage of this limitation is the most short-sighted policy possible, because for every dollar saved in physicians' or hospital fees, the insurance carrier pays out later ten dollars in compensation; and what the insurance company pays is actually paid by the insuring employers in their regular premiums.

Unlimited medical attention of the highest grade should be an axiom of casualty practice. It should be insisted upon, alike by employer and workman. The best outcome of any injury is to have the employee return to his job as a well man in the shortest possible time. It is well to develop a science of dealing with cripples, but the ideal is to have fewer and fewer cripples with which to deal.

The third method of attack on the cost of disability is rehabilitation for self-support—the re-education of an injured man for an occupation which he can follow, or a process which he can perform, in spite of his handicap. The science of rehabilitation is new, and all the experience in it practically has been gained in the effort to make sound and just

provision for the disabled soldier or sailor. Every country among the recent belligerents is operating a comprehensive system of re-education for disabled soldiers, and is placing upon that system more dependence than upon the pension system.

Paying a man a small monthly or weekly stipend on which he is expected to live in idleness is not a very constructive method. With the breakdown of confidence in the pension system, it was realized that the only real compensation for disablement was restoration of capacity for self-support. It was realized further that very few jobs require all the physical faculties, and that in the present-day variety of industrial processes, it is possible to find a job in which a man with a given type of disability can function 100 per cent. efficient. Some jobs are standing some seated, others require walking about, some jobs at a bench working on small articles require but little strength, others involve great physical exertion. Still others do not require the sense of hearing, in others the sense of sight is not essential. Finding the future work of the disabled man, therefore, requires expert and painstaking choice, but a successful selection is possible even for the seriously handicapped. The first aim is to place the man back in a different job in his own trade or in a trade closely related. In such a job his past experience will stand him in good stead. Failing this, he can be retrained for a different line.

The process of retraining the disabled is known as re-education, and can best be provided in a special school for crippled men. The first school of this kind in the United States is the Red Cross Institute for Crippled and Disabled Men, established in New York City through the generosity of Jeremiah Milbank. At this school, open to disabled civilians and soldiers alike, six trades already are being taught—artificial-limb making, motion-picture operating, oxy-acetylene welding, printing, jewelry work, and mechanical drafting. More will be added as the demand develops. Graduates already are giving satisfaction in the jobs to which they have been graduated, so the enterprise has passed the experimental stage. And in the results attained with disabled soldiers abroad there is overwhelming evidence of the logic and practicality of rehabilitation.

The cost of soldier rehabilitation is being met by the United States government and by the governments of some of our allies. It will be admitted without argument as desirable, that the advantages of re-education be made available to disabled civilians as well, but will not the cost be prohibitive? The fact is that rehabilitation effects a reduction rather than an increase in the cost of disability to industry or to the community as a whole.

A typical case will illustrate how the saving is effected. A worker in Massachusetts was injured by a fall while working inside a submarine, and his hand became permanently crippled. In due course his compensation rate was determined and he was referred to the insurance



carrier to be paid ten dollars a week for a long period, with a maximum total payment of four thousand dollars. Since the disability was manifestly permanent, the insurance company wrote the case off their books as a four thousand dollar loss and transferred that amount to reserve to cover the weekly payments. After the compensation had been paid for nearly a year, a new official of the insurance company began looking over the list of men to whom the company was paying compensation. His attention was directed to the man in question and the latter was requested to call at the office of the company. The case was like many thousands of others susceptible of rehabilitation for self-support, so the insurance company official put a proposition to the man in very frank terms. "I believe that you can be trained to earn a good living. I want you to understand very clearly, however, that this proposal is to the financial advantage of the company, but I also believe it is to your advantage as well. A total income of ten dollars a week is not very attractive to you, and probably you would rather return to work at a good wage than remain idle. If you will consent, the company will send you to a school of re-education and see if we cannot get you back on your feet in good shape."

The injured man consented to the proposal and the company sent him to the Red Cross Institute in New York. They began to pay him not ten dollars a week as required by law; but forty dollars a week, twenty to him in New York and twenty to his wife at home. The company also paid liberally his traveling expenses in both directions. In the period of eight weeks he was re-educated in oxy-acetylene cutting and welding and returned home. He is now making not only a satisfactory wage but twice as much as he had ever earned before the accident took place.

In the whole transaction every party at interest was benefited. The man was advantaged in that his general living standard was distinctly raised, and the necessity of working for his living could not be considered as a hardship. The company paid less than five hundred dollars for his rehabilitation and this expense in conjunction with the five hundred dollars already paid in weekly compensation during the first year of idleness made a total for the case of one thousand dollars. They were thus enabled to credit three thousand dollars of profit to the account of profit and loss. The community was infinitely the gainer in that the man, formerly an unproductive consumer, became a useful producer instead. The community further gained in the elimination of the disabled man from the category of a prospective dependent, because while compensation might have taken care of him in a very insufficient way during the period of idleness, there would have come a time when compensation ceased and then he would have been in a desperate economic status indeed—confirmed in habits of idleness, untrained for skilled work, and without any source of support.

A more intelligent handling of disability by insurance carriers will, therefore, reduce their expense, and will thus cut the cost of casualty protection to the employer. There also is needed, however, some revision of compensation laws so that there may be definite encouragement to insurance carriers to offer opportunity of rehabilitation, and definite encouragement to the disabled men to take advantage of it. Practically every compensation case that ever has come to the Red Cross Institute has come on the day his compensation expired. For one year, for two years, or for four years the man has existed in idleness, drawing compensation, and cultivating habits of idleness. When his support was cut off, he then became interested in rehabilitation. Present compensation legislation tends to encourage the man to remain idle because his payments are reduced by any improvement in earning capacity. A revision of this practice will make for more constructive provision.

In short, the first effort should be to prevent injury, the second to minimize its permanent effects, the third—when disability has ensued—to offset its economic consequences. The execution of this complete program is not only sound humanitarian practice—it is good business as well.

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#### **Society of Dental Science, N. S. W.**

Permit me to announce through the medium of your Journal the formation of a new Dental Society registered under the name of the Society of Dental Science, B. M. A. Buildings, Elizabeth Street, Sydney, Australia.

Members of the Odontological Society of N. S. W.; the N. S. W. Dental Graduates Society, and the University of Sydney Dental Graduates Association, have joined forces and will meet together in the interests of Dental Science.

Thanking you in anticipation,

Yours faithfully,

STEWART ZIELE, D. D. S., *Hon. Secretary.*



## GOVERNMENT INSURANCE TO CONTINUE

Treasury Department, Washington, D. C.

December 4, 1918.

## TO THE SOLDIERS AND SAILORS OF AMERICA:

Approximately four million officers and men of the Army and Navy are now insured with the United States Government for a grand total of almost thirty-seven billion dollars.

You owe it to yourself and to your family to hold on to Uncle Sam's insurance. It is the strongest, safest, and cheapest life insurance ever written.

For your protection Uncle Sam has established the greatest life insurance company in the world—a company as mighty, as generous, and as democratic as the United States Government itself. Just as Uncle Sam protected you and your loved ones during war, so he stands ready to continue this protection through the days of readjustment and peace.

The privilege of continuing your Government insurance is a valuable right given to you as part of the compensation for your heroic and triumphant services. If you permit the insurance to lapse, you lose that right, and you will never be able to regain it. But if you keep up your present insurance—by regular payment of premiums—you will be able to change it into a standard Government policy *without medical examination*. Meantime you can keep up your present insurance at substantially the same low rate. The Government will write ordinary life insurance, twenty-payment life, endowment maturing at age 62, and other usual forms of insurance. This will be Government insurance—at Government rates.

The United States Government—through the Bureau of War Risk Insurance of the Treasury Department—will safeguard you and your loved ones with the spirit and purpose of a Republic grateful to its gallant defenders. To avail yourself of this protection, you must keep up your present insurance. Carry back with you to civil life, as an aid and an asset, the continued insurance protection of the United States Government.

HOLD ON TO UNCLE SAM'S INSURANCE.

W. G. McADOO, *Secretary*.

# EDITORIAL

## PROLONGING LIFE

The other day newspapers announced to the world the death of Horace Fletcher, popularly known as the "Chew, chew, man." Some years ago he advocated a theory as to the way to reach an advanced age. It was the careful mastication of food—to chew and insalivate food until it liquifies in the mouth—and this practice became known as "fletcherizing." Mr. Fletcher made a fad of this and it was heralded as certain to promote long life if one would but follow the practice.

There was nothing new in this idea of thorough mastication of food, for Luigi Cornaro and Benjamin Franklin already had advocated the same thing and Mr. Gladstone many years previously had advised his children to "chew each morsel of food at least thirty-two times." But Fletcher's book, "*The A. B. Z. of Our Nutrition*" had an extraordinary sale, having been reprinted no less than ten times.

Notwithstanding his theories, Fletcher died at the age of sixty-nine, whereas Franklin lived to eighty-four, Gladstone to eighty-eight, and Cornaro to ninety-eight.

Mechnikoff conceived the idea that old age was caused, at least in part, by the unchecked ravages of the micro-organisms that live in the digestive tract. He argued that these are taken into the body, largely in the food we eat, and flourish there because no others are taken into the system to destroy them. The last eighteen years of his life he lived on a diet prescribed by himself. He ate nothing that was not cooked, in order that the outside micro-organisms should enter in the smallest possible numbers, and to counteract the effect of those that managed to survive, he drank milk soured by lactic acid bacilli, which he claimed were capable of destroying those that were doing the damage. And yet he died at the age of seventy-one.

Careful living promotes health; there is no reason for disputing that; but death plays such peculiar pranks, especially with theorists, one is almost tempted to say, "What's the use?"

There is no panacea that will bring long life to every user. "What is one man's meat is another man's poison."

Certain it is, however, that diet has a great effect on us and he who chooses his food with regard to the effect it has for good, undoubtedly will find the way toward long life considerably smoothed. In a recent health journal a writer gives the following *rules for a long life*:



"Be moderate in everything. Excess in eating, in drinking, in anything tends to bring on old age.

"Be faithful in your exercise, and be sure to choose an exercise that is helpful to you.

"Stand and sit erect, and *use* your lungs.

"Keep your teeth and gums and throat clean. The mouth is the principal port of entry for undesirable immigrant micro-organisms.

"Be careful to maintain the bowel functions. The digestive tract is a favorite abiding place for hordes of marauding bacteria.

"Have your body occasionally examined. The physician will take notice of what is wrong, and will advise you accordingly. And let *him* do the worrying. Fortunately the exact condition of the organs of the body usually can be seen by physicians, even when they are but slightly off normal.

"*Be happy*. Do not worry; do not allow yourself to become a grouch; do not 'get mad.' Remember that psychologists now contend that you do not clench your hands because you are angry. You are angry because you clench your hands. So do not clench them.

"Act happy, and you will become so.

"Act young, and you will remain so."

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### OHIO STATE DENTAL SOCIETY

To the Officers and Members of the Ohio State Dental Society, Greetings.

Now that the World War is over, and the peoples are resuming peaceful occupations, this is the time to prepare for the "Best Ever" meeting in the history of the Ohio State Dental Society.

I would urge upon all committee chairmen to get in touch and keep in close touch with their committee members, in order that at a late day we may not be caught napping.

A meeting of the Program Committee has been held, and I can say to you now that if Doctor Whitslar's plans materialize as outlined there will be some pleasing surprises.

The Legislative Committee has been extremely active during this legislative session, but at this date I cannot give you the result of their efforts.

The officers of the Component Societies should make liberal use of the publicity columns in THE DENTAL SUMMARY, so generously donated for our use, in order that the members at large in the state may know what the various components are doing.

Again I beg of every member that measure of co-operation with all officers and committees as will insure a most successful meeting in December.

Yours most sincerely,

W. HOWARD HAYDEN, *President*.

# SUGGESTIONS

CONDUCTED BY F. R. CHAPMAN, M.S., D.D.S., COLUMBUS, OHIO

(To Our Readers: Give others the benefit of your practical suggestions by sending a description of them to Dr. F. R. Chapman, Schultz Building, Columbus, Ohio.)

## Anatomical Form in Bridge Work

Bridge work should resemble the natural teeth insofar as it is possible. Correct measurements of the crown diameters should depart from the true measurements but slightly if at all. Lingual surfaces are of greater importance to the function of mastication than the buccal and labial and they should be reproduced with greater care. Where there is great loss of alveolar tissue in the bicuspid and molar regions, lingual roots should be carved upon these surfaces to lighten the weight of thickness, never departing from the true anatomical forms which nature has adopted and which are fundamentally the correct ones.

—Paul R. Stillman, *The Dental Outlook*.

## Ionization

In electric ionization the conducting wire, electrode holder, and active electrode should all be so light in weight that they may be easily supported by the tooth or root being treated. Make a light holder by running about an inch of ordinary copper bell-wire into the rolls to flatten it, and wind this thin, flat part in a spiral around the base end of an ordinary barbed broach. Let the base of all active electrodes be made to slip into this spiral spring holder. A barbed broach makes a splendid active electrode where the metal does not matter. This holds properly a very small amount of cotton at the tip, and also prevents the electrode from slipping out of the root canal.—F. D. Price, *Oral Health*.

## Idiosyncrasy to Dichloramin-T

Soto relates that he applied dichloramin-T in a case of rebellious purulent ethmoiditis. He ordered the woman to use the dichloramin-T in a 0.5 per cent. dilution, in the form of a spray, morning and evening. The atomizer used was made entirely of glass, and she was instructed not to squeeze the bulb more than ten times at one application. By the fifth day of this treatment the nose, lip and cheeks had become much swollen and blistered, as also the nasal mucosa. On suppression of the spray the whole subsided in a few days. Thinking that the preparation of the spray had been defective, he had a new supply prepared, but this caused the same disturbance as before, even more pronounced.

—Jl. A. M. A.



### Blocking the Ophthalmic Branch of the Fifth Nerve

The blocking of this branch is becoming of more interest to the dental surgeon at this time, owing to war injuries of the maxilla. The blocking of the maxillary branch in such cases would not prove adequate for complete anesthesia unless we included the ophthalmic branch. The same general technic that is used for the maxillary branch, with only two exceptions, can be followed. To avoid trouble with the internal maxillary artery, the injection should be slightly to the buccal. The depth of penetration should be from four to five centimeters, allowing the needle to hug the bone closely. Five cc. of a two per cent. solution of novocain will be sufficient for complete anesthesia.

—F. W. Frahm, *Pacific Dental Gazette*.

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### Wax Inlay Technic

Use a wax that has a high melting-point; one that will not be disturbed by body temperature. Warm the wax in hot water so that it may be easily placed in position; chill, remove, carve, polish, and mount with a sprue wire attached at the contact point; now clean the surfaces of the inlay with acetone and a fine camel's-hair brush before investing. Be sure to use the proper amount of water and investment material necessary for a perfect mix. When mixing the investment material tap the mixing bowl repeatedly to dislodge all air-bubbles, pour the investment, and allow it to set for twenty-five minutes; then you can slowly burn the wax out of and anneal the investment. The casting can be done in either a hot or cold mold, using either 22- or 24-k. gold.

—*American Dentist*.

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### Instructions in Re-sterilizing Compound

(1) Thoroughly clean all plaster from compound, breaking any extra large pieces of compound so that there are no pieces larger than an egg.

(2) Place in a pot—a double boiler is preferable, as it prevents the compound from burning at the bottom—and cover well with a solution of glycerite of naphthol (benetol) composed of one ounce to one gallon of hot water.

(3) Bring to a boil as rapidly as possible and boil thirty minutes. *Note:* Be sure the water is really boiling, as the small pieces of plaster left in the compound will cause numerous bubbles to rise.

(4) Pour the water off and pour out the compound, which should be a spongy mass, on a sheet of galvanized iron or clean planed board, previously covered with Russian oil.

(5) Knead thoroughly the same as dough, when the plaster that may have been left in will work to the surface in the form of a bubble. Be sure to keep the hands well covered with Russian oil to prevent the compound from sticking, and start kneading as soon as it can be handled.

Do not use soap and water to prevent the compound from sticking, as the lye in the soap will destroy the oils in the compound.

(6) As soon as the compound begins to show signs of stiffening, roll out on an oiled surface, and just before hardening run a knife across the same, marking off squares of desired size.

An excess of Russian oil incorporated in the compound will seriously retard its setting qualities. An excess of oil may be extracted by again bringing the compound to a boil. Only enough oil should be used to keep the compound from sticking to the table and hands.

—*W. E. Cummer, Oral Health.*

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### Chip Blower Odors

Where filtered compressed air is not available, the ordinary rubber bulb blower has to be used. Not infrequently the air from this instrument becomes offensive even with good care. This may be overcome by placing several small pieces of gum camphor in the bulb. The camphor will evaporate slowly and must be renewed from time to time.

—*F. W. F., Pacific Dental Gazette.*

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### A Plaster Bite for Bridge Work

In constructing bridge work, it is often difficult to transfer crowns or attachments from the abutment teeth to a working model with certainty as to maintaining their proper position and relation throughout the procedure. For small or moderate-sized bridges, a plaster bite, taken as follows, will be found efficient and reliable for this purpose:

With the crowns or attachments securely and accurately in position upon the abutment teeth, mix plaster moderately stiff, and with a suitable spatula apply generously over the abutments and surrounding tissues which are necessary to be reproduced in the model, and have the patient bite the opposing teeth to place.

When the plaster has set, remove the bite, and replace the attachments in the impression. If the attachments pull off in the bite, be sure to press them firmly back into position, and secure with hard wax before running the model. In some cases it may be necessary to split the plaster to remove the bite, but this is generally of little consequence, as the plaster can easily be pieced together with hard wax.

The advantages of this method are certainly of maintaining proper position and relation of attachments, and at the same time obtaining an accurate impression of the opposing teeth.

If that portion of the bite which contains the impression of the opposing teeth is run up in some hard model material such as Weinstein's artificial stone or Spence compound it will be an advantage, for when plaster is used, this portion of the model is often rendered useless by abrasion or breakage.—*C. W. Coltrin, Dental Review.*



# NEW PUBLICATIONS

*Practical Dental Metallurgy.* A text and reference book for students and practitioners of dentistry. By Joseph Pupny Hodgen, D.D.S., Professor of Operative Dentistry, formerly Professor of Dental Chemistry and Metallurgy, College of Dentistry, University of California. Revised by Guy S. Millbury, D.D.S., Professor of Chemistry and Metallurgy and Dean of the College. Fifth edition completely revised. St. Louis, C. V. Mosby Co., Pub., 1918. Price net, \$2.50.

Little need be said of this popular work as it has for years been looked upon as the standard dental text-book on this subject.

This edition has been thoroughly revised and is more complete than any of its predecessors. Data for this edition has been gathered from all sources, the more important dental, chemical and metallurgical journals have been consulted together with other reliable sources of information.

It is not an exhaustive treatise on metallurgy, but rather a clear and practical presentation of the principles of the subject as the author sees them related and applicable to the every-day wants of the dentist.

*Essentials of Pharmacy.* By E. L. Sayre, Ph.G., Ph.M., Dean of the School of Pharmacy of the University of Kansas, and Professor of Pharmacy and Materia Medica, and L. D. Havenhill, Ph.C., Phar.M., Professor of Pharmaceutical Chemistry in the School of Pharmacy of the University of Kansas. 12mo. of 495 pages. Philadelphia and London. W. B. Saunders Company, 1918. Cloth, \$2.75 net.

The authors say that the object of this book is not to furnish an exhaustive treatise, but rather to give a simple brief outline of the important pharmaceutic data in convenient arrangement, and to inspire the student to make free use of the U. S. P., N. F. and other works of reference.

After devoting a chapter to introductory pharmacy, the authors treat successively medicinal substances, chiefly inorganic chemicals, organic chemicals, pharmaceutic preparations of the U. S. P., and N. F., then the subjects of incompatibility, toxicology, etc. Vegetable materia medica has not been incorporated for it constitutes a separate subject of sufficient size and importance to be treated independently. The division of the essentials into six chapters, each having an alphabetical arrangement, is designed to make reference easy.

*An Introduction to the Mamalian Dentition.* By T. Wingate Todd, M.B., Ch.B., F.R.S.C., Captain, Canadian Army Medical Corps, Professor of Anatomy, Western Reserve University, Cleveland, Ohio. St. Louis, C. V. Mosby Company, Pub., 1918. Price net, \$3.00.

The author states that this volume has for its aim the presentation of essentially American views regarding the evolution of tooth forms, views which so far have not been made the basis of an introductory handbook.

Dr. Todd recognizes that a Dental Anatomy course of today calls for the description mainly of living types which, however, can only be properly presented by constant reference to ancestral forms. Hence, although the pages deal mainly with recent dentitions, the paleontological viewpoint has been adopted wherever it has been possible to do so without overburdening the text.

The text is concisely written in a style that is fascinating and well illustrated with more than a hundred engravings.

It is the best treatise, on this subject, that we have seen, and is a valuable book for any library.

# SOCIETY ANNOUNCEMENTS

## Northern Ohio

The Northern Ohio Dental Association meeting will be held in Cleveland, Ohio, Monday, Tuesday and Wednesday, June 2nd, 3rd, and 4th, at Hotel Stattler.

GEO. B. SMITH, *Secretary*.

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## Michigan State

The Sixty-third Annual Meeting of the Michigan State Dental Society will be held at the Hotel Statler, Detroit, April 7th-12th, 1919.

To meet the demand for dental meetings that teach, another post-graduate course, greatly improved and added to, will be put on by the Detroit Dental Clinic Club.

All Michigan talent will also make up the general program.

CHALMERS J. LYONS, *President*.

CLARE G. BATES, *Secretary*.

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## Pennsylvania State Dental Society

The Fifty-first Annual Meeting of the Pennsylvania State Dental Society will be held at the William Penn Hotel, Pittsburgh, Pennsylvania, Tuesday, Wednesday and Thursday, April 29th, 30th, and May 1st, 1919. An interesting and instructive program has been prepared. All ethical practitioners are invited to attend.

J. F. BIDDLE, *Secretary*.

517 Arch St., Pittsburgh, Pa.

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## West Virginia State Board

The next meeting of the West Virginia State Board of Dental Examiners will be held in Wheeling, W. Va., beginning at 9 o'clock on Tuesday morning, June 24th, 1919. For further information and application blanks address R. Mason Hite, Secretary, Mannington, W. Va.

R. MASON HITE, D.D.S., *Secretary*.

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## North Carolina Dental Society

The North Carolina Dental Society will hold its next Annual Session, June 25th, 26th and 27th, at Asheville, N. C., Headquarters Battery Park Hotel.

W. T. MARTIN, *Secretary*.

Benson, N. C.



**Indiana State Board**

The next meeting of the Indiana State Board of Dental Examiners will be held at the State House, Indianapolis, June 23rd to 28th, inclusive. For application and instructions, write to

H. C. McKITTRICK, *Secretary-Treasurer*.  
605 Hume-Mansur Bldg., Indianapolis.

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**Kentucky State Dental Association**

The Fiftieth Anniversary-Jubilee Meeting of the Kentucky State Dental Association will be held at Louisville, Ky., June 9-10-11-12, 1919.

A Post Graduate Course of unusual interest has been planned.

Address all correspondence to

W. M. RANDALL, *Secretary*.  
Louisville, Ky.

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**South Carolina State Board—Change of Date**

The meeting of the South Carolina State Board of Dental Examiners has been postponed until June 30th. The examinations will begin promptly at 9 o'clock, Monday morning, June 30th, at Bamberg, S. C.

All applications *must* be in the hands of the secretary by June 20th.

Application blanks and further information may be obtained by addressing,

R. L. SPENCER, *Secretary*,  
Bennettsville, S. C.

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**Texas State Dental Society**

The Thirty-ninth Annual Meeting of the Texas State Dental Society will be held at Waco, Texas, April 22nd to 25th, 1919.

Several men of national prominence will conduct the post-graduate feature of the meeting, which will supplement the program of papers and clinics by the members.

J. G. FIFE, *Secretary*.  
736 Wilson Bldg., Dallas, Tex.

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**American Institute of Dental Teachers**

The annual meeting of the American Institute of Dental Teachers was held at the Piedmont Hotel, Atlanta, Georgia, January 28-30th.

The following officers were elected for the ensuing year: President, Dr. R. W. Bunting, Ann Arbor, Mich.; Vice-President, Arthur D. Black, Chicago, Ill.; Secretary-Treasurer, Abram Hoffman, Buffalo, N. Y.; Executive Board, G. S. Millberry, San Francisco, A. H. Hipple, Omaha, A. E. Webster, Toronto.

The next regular meeting will be held at Detroit, Mich.

ABRAM HOFFMAN, *Secretary*.  
381 Linwood Ave., Buffalo, N. Y.

### Illinois State

The Fifty-fifth Annual Meeting of the Illinois State Dental Society will be held in Peoria, Illinois, May 13, 14, 15 and 16, 1919. The officers of the society are as follows: L. B. Torrence, President, Chester, Illinois; G. D. Sitherwood, Vice-President, Bloomington, Illinois; J. P. Luthringer, Secretary, 507 Jefferson Building, Peoria, Illinois; T. L. Grisamore, Treasurer, Chicago, Illinois; G. H. Henderson, Librarian, Chicago, Illinois.

Most sincerely yours,

J. P. LUTHRINGER, *Secretary.*

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### Vermont State Board

The next meeting of the Vermont Board of Dental Examiners, for the examination of candidates to practice in Vermont, will be held at the State House, Montpelier, commencing at 2 P.M., on June 30th, 1919, and continuing for three days.

To be eligible for examinations a candidate must be : *First*, twenty-one years of age. *Second*, a graduate of a high school of the first class, and *third*, a graduate of a reputable dental college.

Applications must be in the hands of the Secretary not later than June 21st. For further information apply to

HARRY F. HAMILTON, *Secretary.*

Newport, Vermont.

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### Missouri State

The Fifty-fourth Annual Meeting of the Missouri State Dental Association will be held at Hotel Statler, St. Louis, April 14th, 15th, and 16th, 1919.

The first two days of the meeting will be devoted to clinical instruction in the most advance phases of modern dental practice, by a staff of competent and experienced teachers. The special clinicians and their subjects are: Justin D. Towner, Memphis, *Periodontia*; George Thompson, Chicago, *Dental Ceramics and Removable Bridges*; Boyd Bogle, Nashville, *Radiodontia and Oral Surgery*; Gillette Hayden, Columbus, *Preventive Dentistry*; S. L. Silverman, Atlanta, *Conductive Anesthesia and Root Resection*; H. A. Maves, Minneapolis, *Crown and Inlay Technic*; Phillip R. Thomas, Minneapolis, *Pediadontia*.

A general clinic session of individual and group clinics will be given the afternoon of the 16th. The title of all clinics must be sent to Dr. Charles P. Grosby, Frisco Building, St. Louis, before March 24. Members of the National Dental Association are invited to attend the meeting and contribute to the clinical program.

H. CARLYLE POLLOCK

GEORGE W. HILLIAS

CLARENCE O. SIMPSON, *Chairman.*  
*Publicity Committee.*



# OBITUARY

## DR. H. E. McCLEERY

Dr. Harry E. McCleery, aged 40, a practicing dentist in Columbus for the past fourteen years, died at his home in Beechwold, Sunday, March 2nd, 1919, following an illness with influenza. He was associated with Dr. J. A. Sanders in the practice of his profession, with offices in the Hartman Building.

Dr. McCleery was a graduate of Ohio Medical University, class of 1901; was a member of Xi Psi Phi Dental Fraternity, and of the Columbus, Ohio, State and National Dental Societies; a member of Champion Lodge, Knights of Pythias, and a member of the board of trustees of the Fifth Avenue U. B. Church.

He is survived by his wife, formerly Miss Stella Jeffries, a daughter of Mr. and Mrs. S. S. Jeffries, of Columbus, to whom he was married in 1902; his parents, Mr. and Mrs. Martin McCleery, of Pleasantville; a daughter, Miss Marquise McCleery; a sister and six brothers, one of whom, Herbert McCleery, lives in Columbus. Two other daughters, Geraldine and Lucille McCleery, are deceased.

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## THE JOHN R. CALLAHAN MEMORIAL

At the December, 1918 meeting of The Ohio State Dental Society, a resolution was adopted to perpetuate the memory of the late John R. Callahan, in recognition of his contributions to the science and art of dentistry and his unselfish devotion to its advancement throughout the many years of his professional life.

The committee to which this Memorial was referred has decided on the following as the most appropriate, and worthy of the approval of the profession.

*First*, a Bronze Memorial to be placed in The Cincinnati General Hospital Grounds.

*Second*, a Callahan Memorial Research Fund. The income from which, to be awarded from time to time to the person making the best contribution to The Science and Art of Root-Canal Problems. The Fund and Award to be under the direction of a committee perpetuated by The Ohio State Dental Society. The prize to be known as The John R. Callahan Award.

The sum necessary in the minds of the committee to carry out the Memorial in its two phases should approximate \$8,000.00, an amount

that should speedily be raised in these times when the spirit of giving is universal.

Subscriptions to this fund by individuals or societies will be duly credited and should be forwarded to the Secretary-Treasurer of the Fund.

*Committee*

T. Irving Way, *Chairman*,  
52 Groton Building, Cincinnati.  
Henry E. Germann, *Sec'y-Treas.*  
719 Gwynne Building, Cincinnati.

L. L. Barber, Toledo.  
Weston A. Price, Cleveland  
L. E. Custer, Dayton.  
Edward C. Mills, Columbus

### RESOLUTIONS ON THE DEATH OF DR. R. G. ROBINSON

*Whereas*, Almighty God, in His infinite wisdom, has removed from us our friend and fellow member, Dr. H. G. Robinson; and

*Whereas*, The dental profession by his death has lost one who was conscientious and upright in all that pertained to its usefulness; therefore be it

*Resolved*, That the Memphis Dental Society deploring his death extends its sympathy to his bereaved family, and will ever bear in memory its association with him. And be it

*Resolved*, That a copy of these resolutions be sent to the bereaved ones, and a copy sent to THE DENTAL SUMMARY for publication.

With our sympathy,

MEMBERS OF MEMPHIS DENTAL SOCIETY.

### RESOLUTIONS ON THE DEATH OF DR. PORTER JOHNSTON

*Whereas*, The Supreme Ruler of the universe has, in His infinite wisdom, removed from the scene of his earthly labors our esteemed friend and brother, Dr. Porter Johnston; and

*Whereas*, The Memphis Dental Society, of which he was a useful and honored member, desires to record its appreciation of him as a man, and its sense of sorrow and loss at his death; therefore be it

*Resolved*, That this society extends to the widow and family of our deceased member its sincere sympathy in their bereavement; that this resolution be spread upon the minutes of this society, and a copy be forwarded to THE DENTAL SUMMARY for publication.

With our sympathy,

MEMBERS OF MEMPHIS DENTAL SOCIETY.



# OHIO STATE SOCIETY

Through the generosity of the publishers of THE DENTAL SUMMARY, this space is made available for the use of the State Society and its Components in making announcements of general interest. The secretary of the State Society will use this medium as occasion requires and it is hoped that this will prove a valuable means of disseminating information to the Components and to the membership individually.

Many members have not yet paid their dues for 1919; the mailing list of THE DENTAL SUMMARY and of the *National Dental Journal* is made up from those who are in good standing, i. e. those whose dues are paid for the current year. If you have not paid yours, please do so at once and secure your journals regularly from the beginning of the year.

F. R. CHAPMAN, *Secretary*.

## Committees for 1919

### Ad Interim Committee: Board of Directors

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A. O. ROSS E. H. SHANNON  
C. H. SCHOTT CHAS. SWOPE

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L. P. BETHEL, *Editor* JOHN MOLYNEUX  
F. R. MANN PAUL CASSIDY

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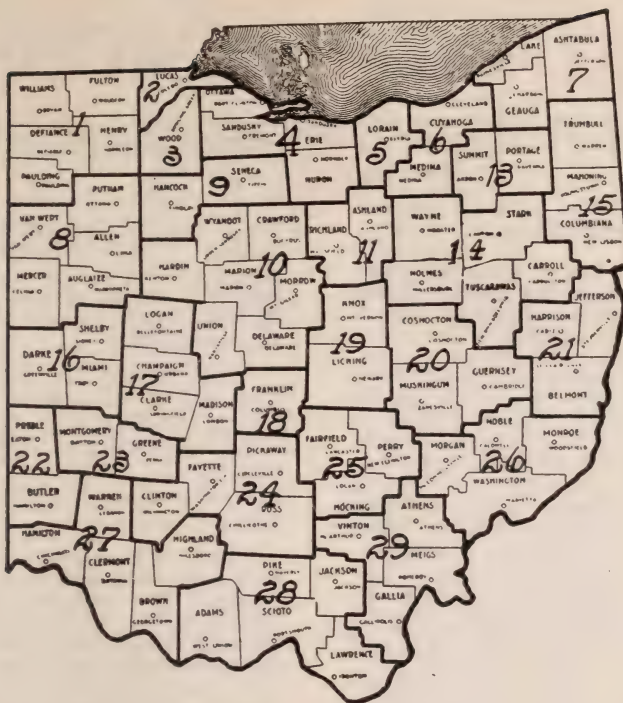
### Library

H. M. SEMANS, *Chairman*  
E. C. MILLS C. S. STARKWEATHER  
J. H. STUKEY H. R. C. WILSON

## The Component Societies of the Ohio State Dental Society

(This list of Officers is compiled from information furnished by the Secretaries of the various Components; where incorrect it is due to lack of information relative to elections. Secretaries are requested to keep the list correct by notifying the secretary of the State Society or the Editor of THE DENTAL SUMMARY of the result of elections.)

- 1 MAUMEE VALLEY DENTAL SOCIETY, meets 2d Tuesday, June and Oct.—Pres., A. B. Thompson, Metamora; V. Pres., N. A. Cunningham; Rec. Sec., O. S. Applegate; Cor. Sec., H. M. Jordan, Hicksville; Treas., J. A. Benner.
- 2 TOLEDO DENTAL SOCIETY, meets 3d Friday. Pres., W. J. Dierks, 1018 Spitzer Bldg., Toledo; V. Pres., R. K. Wood; Sec., L. C. Jackson, 2205 Ashland Ave., Toledo; Treas., C. H. Cox
- 3 WOOD COUNTY DENTAL SOCIETY, meets 2d Wednesday.—Pres., F. W. Wemmer, North Baltimore; V. Pres., B. D. Roe; Sec., R. E. Milbourn, North Baltimore; Treas., T. M. Lea.
- 4 NORTH CENTRAL OHIO DENTAL SOCIETY, meets 3d Wednesday, Jan. Apr., July and Oct.—Pres., R. E. Wolesslagel, Bellevue; V. Pres., A. G. Thatcher, Fremont; Rec. Sec., L. H. McDonald, Norwalk; Cor. Sec., S. H. Rogers, Sandusky; Treas., E. S. Braithwaite, Willard.
- 5 LORAIN COUNTY DENTAL SOCIETY, meets 1st Tuesday, Feb., Apr., Sep. and Nov.—Pres., W. G. Schaeffer, Amherst; V. Pres., J. A. Minnich; Rec. Sec., P. E. Maddock; Cor. Sec., J. E. Betteredge, Elyria; Treas., J. E. Trombley.
- 6 CLEVELAND DENTAL SOCIETY, meets 1st Monday, Pres. W. C. Stillson; V. Pres., Ira Saum; Rec. Sec., S. F. M. Hirsch, 5415 Euclid Ave., Cleveland; Treas., E. D. Phillips; Cor. Sec., Frank Acker, 14516 Detroit Ave.
- 7 NORTHEASTERN OHIO DENTAL SOCIETY, meets 2d Monday.—Pres., N. H. Bishop, Andover; V. Pres., H. O. Frederick; Sec., O. T. Battles, Jefferson; Treas., O. T. Battles.
- 8 NORTHWESTERN DENTAL SOCIETY, meets 4th Wednesday.—Pres., A. N. Bruzilius, Lima; V. Pres., E. A. Bobo and G. L. Brunk; Sec., J. W. Dimond, Lima; Treas., J. K. Bannister.



- 9 HANCOCK-SENECA COUNTIES DENTAL SOCIETY, meets 2d Wednesday.—Pres., T. C. Schwartzbek, Findlay; V. Pres., A. O. Cole; Rec. Sec., E. V. Burns; Cor. Sec., A. E. Mann, Findlay; Treas., V. H. Michener.
- 10 CENTRAL OHIO DENTAL SOCIETY, meets 1st Wed., Feb., May and Oct.—Pres., C. B. Emery, Marion; V. Pres., O. M. Young and F. Burger; Rec. Sec., D. G. Welch; Cor. Sec., F. R. Mann, Marion; Treas., F. C. McGaughy.
- 11 RICHLAND-ASHLAND COUNTIES DENTAL SOCIETY, Meets last Monday, Feb., June and Oct.—Pres., J. F. Winans, Shelby; V. Pres., B. W. Livingston; Rec. Sec., F. O. Eckstein; Cor. Sec., J. H. Bristol; Treas., F. H. Williams, Shelby.
- 12 STARK COUNTY DENTAL SOCIETY, meets 3d Wednesday.—Pres., J. C. McConkey, Canton; V. Pres., C. O. Carr; Rec. Sec., E. H. Alden; Cor. Sec. and Treas., B. Hugo Bowman, Canton.
- 13 SUMMIT COUNTY DENTAL SOCIETY, meets 1st Friday, Pres., W. C. Cooper; V. Pres., Jas. Connors; Rec. Sec., H. G. Haas; Cor. Sec., G. H. Dumm, Kent; Treas., C. S. Hoover.
- 15 CORYDON PALMER DENTAL SOCIETY, meets 2d Thursday, April and Oct.—Pres., G. H. Ormeroid, Warren; V. Pres., J. F. Steele and T. J. Evans; Rec. Sec., R. R. Bode; Cor. Sec., J. H. Chessrown, Wick Bldg., Youngstown; Treas. J. K. Nash.
- 16 WESTERN OHIO DENTAL SOCIETY, meets 1st Thursday, Feb., May and Oct.—Pres., R. M. Kerr, Sidney; V. Pres., R. S. Van Hise, H. V. Steinmetz and J. F. Richeson; Sec-Treas., R. R. Kelsey, Greenville
- 17 MAD RIVER VALLEY DENTAL SOCIETY, meets 2d Monday, bi-monthly.—Pres., C. M. Evans, Springfield; V. Pres., . . . ; Rec. Sec., C. A. Dawson; Cor. Sec., S. D. Hockman, Springfield; Treas., H. G. Butcher.
- 18 COLUMBUS DENTAL SOCIETY, meets last Tuesday, Pres. Oscar Miesse; V. Pres., D. P. Snyder; Sec., F. L. Gruber, 131 E. State St., Columbus; Treas., A. O. Ross.
- 19 W. D. MILLER DENTAL SOCIETY, meets 2d Thursday, May and Oct.—Pres., E. V. Prior, Newark; V. Pres., W. S. Deeley; Rec. Sec., J. D. Ford; Cor. Sec., L. E. Davis, Granville; Treas., W. B. Grossman.
- 20 MUSKINGUM-COSHOCTON-GUERNSEY COUNTIES DENTAL SOCIETY, meets 2d Thursday, Jan., May and Sept.—Pres., W. H. Dillon, Zanesville; V. Pres., P. F. Walker and A. W. Boyd; Rec. Sec., J. A. Honabarger; Cor. Sec., B. M. Beatty, Zanesville; Treas., H. J. Boyd.
- 21 EASTERN OHIO DENTAL SOCIETY, meets 1st Thursday, May and Oct.—Pres., H. D. Smith, Cadiz; V. Pres., C. S. Starkweather and L. B. Peterson; Rec. Sec., J. K. Hunter; Cor. Sec., J. G. Parr, Martins Ferry; Treas., W. J. Nesbitt.
- 22 BUTLER COUNTY DENTAL SOCIETY, meets 3d Friday, each month.—Pres., P. A. Krucker, Hamilton, V. Pres., E. E. Meisterhaus; Sec-Treas., F. T. Craven, Hamilton.
- 23 MIAMI VALLEY DENTAL SOCIETY, meets last Monday. Pres., H. C. Huffman; V. Pres., H. L. Oliver; Cor. Sec., H. M. Brewer; Rec. Sec., W. B. MacBain; Treas., J. R. Arthur; J. M. Chase; representative to the State Dental Society.
- 24 REHWINKEL DENTAL SOCIETY, meets 3d Thursday. Pres., M. G. Phillips, Chillicothe; V. Pres., A. M. Bush and O. A. Thompson; Sec., F. D. Wollard, Washington C. H.; Treas., W. E. Robinson, Washington C. H.
- 25 HOCKING VALLEY DENTAL SOCIETY, meets 1st Monday.—Pres., J. J. Stukely; V. Pres'ts., C. F. Ackers and W. M. Scott; Sec., W. E. Shadrach, Lancaster; Treas., S. D. Vosper.
- 26 SOUTHEASTERN OHIO DENTAL SOCIETY, no report.
- 27 CINCINNATI DENTAL SOCIETY, meets 3d Friday. Pres., S. J. Rauh, Cincinnati; V. Pres., R. W. Taylor; Rec. Sec., Wilson Foster; Cor. Sec., Paul Cassidy, 807 Livingston Bldg., Cincinnati; Treas., J. D. Gordon.
- 28 SOUTHERN OHIO DENTAL SOCIETY, meets, 3d Monday, May and Oct.—Pres., O. D. Donaldson, Portsmouth; V. Pres., F. C. Goodwin; Sec., E. C. Jackson, Portsmouth; Treas., E. O. Buchanan.
- 29 OHIO VALLEY DENTAL SOCIETY, meets 2d Wednesday, Apr and Oct.—Pres. M. D. Hartinger, Pomeroy; V. Pres., R. B. Church; Sec., C. S. Shumaker, Pomeroy; Treas., J. B. Hodge, Middleport.



# NEWS and OPINIONS

CONDUCTED BY G. E. HARTER

## LACONIGRAMS

We must make the best of a bad job. As in the case of other caught and convicted criminals, Germany must be fed in order that she may pay the price of her crimes.

Revolutions are brought about by minorities that know exactly what they want, working within a majority that is divided even in the negative knowledge of what it does not want. So Germany and Russia are torn to pieces by anarchistic ravings, comparable to nothing, save murderous bedlam. Berlin resembles nothing so much as a gang of street urchins fighting for crusts in the gutter.

The sooner sane and sensible men agree that extinction is the only safe way to deal with Bolshevism and Bolsheviki, the sooner the world may become a decent place in which to live.

It is notable that some of our American "Soviets" (societies of loafers and robbers) are "resoluting" to work four hours per day. This wonderful concession to industrial thrift will, of course, outlaw them in all orthodox tramp organizations.

It is not entirely unthinkable to expect a fiduciary receivership for Mexico—and why not for Germany as well? May even require a few bayonets to enforce it in either case. Well, we have the bayonets.

Death by starvation is becoming common in Russia; only among the intelligent classes, however. No fear of Bolsheviki starving so long as there remain a peck of seed-corn in reach. Pirates are not bothered by considerations of ownership.

Liberty does not and never did mean license to run amuck. This important distinction may need enforcement in *Mittel Europa* as elsewhere.

The advance in all prices since 1914, averages 114 per cent. In view of this fact, a net average decline of 6 per cent. since November 11, 1918, seems negligible, particularly as food-stuffs show an advance of 1 per cent. during the same period, except as a prophecy for an eventual return to the normal balance of value and cost.

In re. Dr. Bethel's editorial reference to the death of Dr. Fletcher—of course, everybody who knows me knows also that I do not wholly agree with his rather questioning view. Let it be borne in mind that Fletcher *began* "fletcherizing" *after* he had reached the stage of wreckage, thereby withdrawing his feet from the grave and keeping them out of it for many

years. Surely such result leaves nothing to lament. A well-developed, active will, plus proper exercise and diet, and plus sane living generally, will do much to bring into actuality the physiologist's dream of an average human life of 150 years.

May be just as well to leave the gaff on the hind legs of the Dove of Peace for a while. "When the devil is ill the devil a saint is he; when the devil gets well, the *devil* a saint he'll be."

What's the matter with the Kiel Canal as a health resort?

Problems of reconstruction concern us vitally if not quite so acutely as they do the peoples of Europe. The world is no longer divided into isolated groups of alien peoples. Eventually America must pay for all the devilishness of the ex-kaiser and his mob of savages, just as, at the last, business must pay for all destruction of values. All the food in all the world is in one basket. Waste anywhere means want everywhere—as previously stated in these pages.

The Niagara Falls school clinic is now open two full days each week.

The "King's Daughters," a woman's church organization, has opened a school clinic at Norfolk, Va. Truly a splendid outlet for the spirit of beneficence.

Dr. Karl Bolender is a late addition to the dental force at Grand Rapids, Mich.

The Ransom & Randolph Co. has added a sixth laboratory, this one at Detroit. The patronage would seem to indicate an appreciation in the profession for intelligent and painstaking service. Swamped the first day.

Columbus, Ohio, is to have a dental dispensary similar to the Rochester one, that has made itself a factor in the annals of dentistry.

Utah is moving for compulsory dental examination in schools. If necessary in the army, why not in the schools?

The Watertown, N. Y. Clinic makes a nominal charge of ten cents per visit, "just to avoid the stigma of charity." Something in that idea.

Dr. Lotta Frink, of Watertown, is the first woman dentist in South Dakota.

Dr. Russell Wetzel, has taken over by purchase the office and practice of Dr. Charles Outcalt, at Lancaster, Ohio. Dr. Outcalt has gone to California to remain permanently.

## THE DENTAL SUMMARY

Better be a little careful that your assistant operator is duly and truly prepared, worthy and well qualified with diploma and license or the gobbluns 'll git you. Vigorous campaigns against unlicensed helpers are reported in several large cities.

Arkansas convicts are to have dental service.

The new Texas dental law, regulating practice, and requiring state board licenses, was signed by the governor on February 26.

Dr. George Villain, the famous French dentist, is now in this country on the joint invitation of the American Institute of Dental Teachers and the Surgeon-General of the Army to lecture on plastic surgery and facial restoration.

Dr. Villain has been in the service of the French government since 1914, and during that time has treated more than four thousand cases in which facial restoration was required. He received two months' leave of absence from the French government. Readers will do well to hear one or more of his able and instructive talks.

Dental clinics are to be added to the equipment of the eight Chicago tuberculosis dispensaries. The health commissioner, after thorough investigation, concludes that bad teeth have much to do with the prevalence of tuberculosis.

The Fox River Valley Society met at Fond du Lac, on March 11.

A few copies of Dr. Eugene S. Talbot's "Interstitial Gingivitis and Pyorrhea Alveolaris" still remain to be disposed of to the first comers at \$1.00 per copy. Cut out this item, pin it and a dollar bill to your letter-head and mail to THE DENTAL SUMMARY, TOLEDO, OHIO, I'll do the rest. The book sold originally at \$4.00, and is the last revised edition.

Advance subscriptions for the monograph on "Fractures and Dislocations of the Jaws," by Dr. Chalmers J. Lyons, D.D.S., Professor of Oral Surgery, University of Michigan, are coming in. The price has been fixed at \$2.00. It will contain all that is known on the subject treated, and should be in the library of every dentist. Send subscriptions to this office.

The Pennsylvania state board has been empowered to hold special examinations when deemed advisable.

Kenton, Ohio, is to have a school clinic.

### Major Albaugh Guest of Brother Officers

PRESENTED WITH PARCHMENT CONTAINING  
NAMES OF ALL OFFICERS IN THE  
ORGANIZATION

When the officers of the Camp Sherman Dental Corps gathered at a banquet in the private dining room of the Clinton Hotel last Wednesday evening, there was one among them who was very much surprised and as one would say flustered.

That one was Major H. E. Albaugh, newly

appointed camp dental surgeon, who was the guest of honor of his brother officers and their commander.

The banquet was a huge success and the entertainment most pleasing to all. A. L. Martin acted as master of ceremonies and introduced the following speakers: Lieutenants H. L. Burris, L. P. Pasternacki, J. R. Wikeen, H. D. Morris, H. G. Allister, C. F. Wermuth, Burton McCroba, O. G. Stephenson, H. A. Ball, L. G. Stewart, J. F. McDonald and W. F. McNamara.

Major Albaugh also spoke to the officers and thanked them for their loyalty and good will toward him and assured them of his appreciation. He was presented with a parchment containing the names of all the officers in his organization as a token of their esteem.

Much credit is to be given to Lieutenants Pasternacki and Wikeen, on the committee of arrangements, for the excellent way in which the banquet and entertainment were given.

### Dental Sorority Created

Women students of the colleges of dentistry at the University of Minnesota, University of California and University of Illinois have organized a dental sorority, Epsilon Alpha.

The sorority was organized at Chicago, early in February, where representatives of the women from the three schools met with deans of the schools. Dean Alfred Owre, of Minnesota, Dean G. F. Millbury, of California, and Dean F. B. Moorhead, University of Illinois, were present.

Invitations have been extended to other colleges of dentistry in which there are women students.

### New Tax Hits Narcotics

Physicians, dentists, druggists and manufacturers or dealers who sell or administer narcotic drugs are required under the new revenue bill to register and pay license taxes to revenue collectors. This amendment of the Harrison narcotic drug act also taxes opium, cocaine and derivatives or medicines containing these at the nominal rate of one cent an ounce, and makes it illegal to sell drugs not bearing revenue stamps.

Unstamped packages of the drugs in stores or elsewhere are liable to seizure, but Revenue Bureau officials will allow a reasonable time for compliance with this requirement. Manufacturers, importers and wholesalers hereafter will be compelled to make monthly reports of their dealings in the drugs or in preparations containing them. These new legal provisions are regarded as police measures by which revenue officers hope to wage a much stronger fight against narcotics than in the past.

Physicians, dentists, veterinary surgeons and other practitioners are taxed three dollars a year for the drug privilege, but they will be credited with the one dollar tax under the old law. Druggists and other retail dealers are taxed six dollars a year, wholesalers twelve dollars, and manufacturers or importers twenty-four dollars.



## THE DENTAL SUMMARY

### Ohio—Miami Valley

Dayton, March 12.—Election of officers of the Miami Valley Dental Society for the ensuing year featured a meeting held by the society at the Dayton Club.

H. C. Huffman was elected president; H. L. Oliver, vice-president; H. M. Brewer, corresponding secretary; W. B. MacBain, recording secretary; J. R. Arthur, treasurer, and J. M. Chase, representative to the meeting of the State Dental Society.

### Minnesota—State

Minneapolis, Feb. 9.—K. Edward Carlson, of St. Paul, was selected president of the Minnesota State Dental Association at the annual meeting yesterday, in St. Paul. Other officers elected are B. Featherston, Red Wing, vice-president; Max Ernst, St. Paul, secretary, and T. D. Abernathy, Rochester, Minn., treasurer.

Recommendations were made to Governor Burnquist in regard to filling the three vacancies on the Minnesota state board of dental examiners, created by the fact that the terms

of three members are about to lapse. Six names were suggested to the governor for his choice.

### New York—Tri-County

Olean, Feb. 10.—The Tri-County Dental Society elected the following officers in its annual meeting, Saturday: F. W. Werner, of Angelica, president; B. H. Eddy, of Olean, vice-president; M. B. Cottrell, of Andover, secretary and treasurer.

Dr. F. W. Low, of Buffalo read a paper on "Prophylactic Care of the Teeth." The society is composed of dentists of Allegany, Cattaraugus and Steuben Counties.

### Oklahoma—State

Oklahoma City, March 3.—Some of the most noted dentists in the United States are in the city this week to give post-graduate courses for the Oklahoma Dental Society, at its seventh annual meeting.

Among them are Thomas B. Hartzell, of Minneapolis; M. L. Rhein, of New York; M. M. House, of Indianapolis; F. Ewing Roach, of

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### Jackson's Orthodontic Appliances



Send plaster models of your cases. Appliances designed to correct any irregularity. Mailed with full instructions when requested.

**Price \$7.00 each**

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### Known Value Paid for Scrap Metal

We do not guess the values of your scrap gold, platinum, amalgam, sweepings, etc. Our experts analyze it, test it, assay it, and ascertain by scientific methods, its true and exact value. And we pay you for it on that basis.

Our laboratory tests enable us to pay the real value—the highest possible prices for all such material. Our value determining methods are scientifically exacting and reliable.

Mail us today your filings, cuttings, bridges, false teeth (with or without gold fillings), crowns, platinum sheet or wire, scrap gold, bench sweepings, etc.

We will send you the full value of it in spot cash the same day as we receive it, and will hold your material ten days subject to your acceptance of our remittance.

We also buy old jewelry, watches, silver plate, magnetic points,—anything containing gold, silver or platinum or jewels.

Dun and Bradstreet references

**Ohio Smelting & Refining Company**  
913 Park Building Cleveland, Ohio

## THE DENTAL SUMMARY

Chicago; Willis A. Coston, of Topeka, and A. W. Starbuck, of Denver.

Classes are being conducted in the treatment of pyorrhea, painless extractions, removable appliances, plate, crown, and bridge work, and inlay and root-canal work.

### First Aid for Your Income Tax

In the first place, it must be worked by algebra, astronomy, trigonometry and syntax, and then you arrive at an answer which may be correct and may not. If your income is \$2,400 per year, and you have a diamond ring and an automobile and are married to a brunette girl 26 years old, you take the amount of your income and your personal property, subtract the street number, multiply by your height, add your wife's age, divide by your telephone number, then swear to the result before a notary public and send in your statement.

### Washington's Teeth a Bad Fit

George Washington suffered from defective teeth. Before he was thirty he had frequent toothaches. One by one he had his teeth drawn. Eventually he had to use artificial teeth—according to some biographers, as early as 1789.

It seems that Washington's artificial dentures were of rather primitive and imperfect workmanship, and fit so badly that they caused a distortion of the mouth and a consequent change of the lower part of the features.

When Stuart painted Washington's famous picture, says P. L. Ford, in his book, "*The True George Washington*," he tried to remedy the malformation the artificial teeth had given to Washington's mouth by padding under the lips with cotton. The same biographer chronicles that in 1796, Washington was furnished with two sets of "seahorse" (ivory) teeth and these fit much better. This double set of ivory carved teeth was one of the sets that a New York dentist, Dr. Greenwood, made for him.

"Do you take exercises after your bath?"  
"Yes, I generally step on the soap as I get out".—*Exchange*.

### DEATHS

At Roxbury, Mass., March 6, Dr. Michael J. McDonnell.

At Gouverneur, N. Y., March 10, Dr. George B. Barnes, aged 67. He had practiced there over 40 years.

At Missoula, Mont., February 9, of scarlet fever and influenza, Dr. R. G. Anderson, aged 36.

At New York City, February 15, Dr. Furman Kennedy Ruff, aged 63. He had practiced in New York over 30 years.

At Long Island City, N. Y., February 17, of paralysis, Dr. Henry Frederick Barge, of Astoria, L. I., aged 33.

At Cincinnati, Ohio, February 10, of heart trouble, Dr. Robert S. Crawford, aged 61.

At Philadelphia (Mt. Airy), February 12, Dr. William F. Sommers.

At Windham, Pa., of pneumonia following influenza, Dr. Frederick Frisbie Knapp.

At Brooklyn, N. Y., March 6, Dr. Thomas Albert Quinlan, aged 74. Had practiced in the same offices over 40 years.

At New York City, March 8, of pneumonia, Dr. Howard Osgood Moxom, aged 30.

At Chicago, March 8, Dr. Charles W. Lichtenberg, aged 72. He had practiced in Chicago for 54 years, and leaves two sons, Howard and Albert, both dentists.

At Columbus, Ohio, March 2, of influenza, Dr. Harry E. McCleery, aged 40. He had practiced in Columbus for 14 years.

At Bloomington, Ill., March 10, Dr. Silas N. Stevens, of Chicago, was killed by an interurban car from which he was alighting. He had offices at Bloomington and Danville.

At Boston, General Hospital, March 13, Lieut. Dr. Charles S. Spencer, of Concord, N. H.

At Boston, Mass, March 6, of pneumonia, Dr. Michael McDonnell, of Holyoke, Mass.

At Norwich, Conn., March 12, of tuberculosis, Dr. Walter S. Smith, aged 47.

### Illinois—Central

Litchfield, Feb. 24.—Dentists recently attending the annual convention of the Central Illinois Dental Society, elected A. H. Boehring, Pana, president; H. C. Pence, Taylorville, vice-president; A. E. Sihler, Litchfield, secretary; W. H. Houser, Taylorville, treasurer; and W. R. Click, Morrisonville, librarian.

Hillsboro was chosen as the next convention city.

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FOR SALE—Office equipment in one of the best towns in Northwestern Ohio; established fourteen years. The equipment includes complete electric outfit, except switchboard, compressed air and all other modern appliances. The office is steam heated with an excellent north light. Good prices are obtained and there is no cheap competition. Address, Dr. E. V. Burns, 403 Ewing Bldg., Findlay, Ohio. 430C

FOR SALE—An exceptionally fine practice in Grand Rapids, Mich., of about fifteen years' standing. An exceptional opportunity for the right kind of man. Owner intends specializing. Address for particulars. 440C, care The Dental Summary.

FOR SALE—Well equipped dental office. Over \$5,000 strictly cash practice; good prices. Indiana city with rich county. Changing climate. Address, 450P, B. G., The Dental Summary.

FOR SALE—\$5,000.00 ethical practice in Ohio town of 2500. Good farming country. Rent low. Office invoices \$1,500.00. Will make the price right to those interested. Address, A. J. H., Box 143, Dayton, Ohio. 570C

WANTED—First-class operator, capable of managing office. Must be registered in Iowa. Fine opportunity for good man. Address, N. W. Hanson, Good Block, Des Moines, Iowa. 410C

WANTED—Experienced operator. Permanent position. Write for particulars. Strictly ethical. Address, N. O. Lynn, D.D.S., Tucson, Arizona. 460C



## Not the Genuine Watts Metal

The lay press recently has given circulation to a story coming from England, of serious systemic infection caused by wearing a Watts' metal plate. Investigation has determined that the offending plate was not made of genuine Watts' metal as supplied only by R. & R., but from an old formula still followed by some English makers, a tin and silver formula, "16 to 1." But even at that the newspaper accounts must have been grossly exaggerated. In the English alloy, impure tin may have been used; it may have been contaminated with zinc or other base metals. In the fifty years that the genuine American Watts' metal has been made and sold and used by thousands of dentists, there never has been a single plate showing the slightest corrosion, and it is doubtful if the one reported from England as containing tin and bismuth did so. At any rate, the material used was a confessed counterfeit of the original Watts' metal, and American dentists need give the matter no concern further than to bear in mind the old injunction, "Beware of Counterfeits."

## Recent Patents Relating to Dentistry

- 1281500—Artificial tooth, Georges A. Brouillet, Brookline, Mass.
- 52566—Design, Lip-retractor, Hugo Friedman, Chicago, Ill.
- 1282199—Artificial tooth, Thomas W. Dee, Houston, Texas.
- 1282416—Blowpipe and cutting torch, John Harris, Cleveland, Ohio.
- 1282446—Artificial tooth anchor, Thomas G. McMahon and G. E. Fritz, Chicago, Illinois.
- 1283189—Combined dentist's lamp-holder and mirror, Edgar G. Houck, La Grande, Oregon.
- 1282997—Blowpipe, Emile Waldmeier, Gulfport, Miss.

Copies of above patents may be obtained for fifteen cents each, by addressing John A. Saul, Solicitor of Patents, Fendall Building, Washington, D. C.

## Get Off the Sucker List!

Are you on the sucker list?

If you are it is probably because you are *not* a sucker but a patriotic citizen who has known the Liberty Bond to be a good thing.

Get-rich-quick swindles have been the great American sport for years. The sharpers who sell fake stocks saw their game endangered when Uncle Sam started his great Liberty Loan campaigns.

But they are smart—these gentlemen who live by their wits.

Instead of complaining they jumped in and put themselves and all their employes to work selling Liberty Bonds.

And they kept lists of the names of the people to whom the Liberty Bonds were sold.

Now those lists, combined, make what the

sharks regard as the biggest and best "sucker list" the gentry ever had. They are even dealing in them—buying and selling them among themselves.

If you have a Liberty Bond or a book of War Savings Stamps you are a "prospect" for fake stock. Your name is on the sucker list of the oily-tongued sharper.

You are not to blame for being on the sucker list but it is up to you to get off—away off—that list at your first opportunity.

The American people are paying out some Half a Billion Dollars a year to the support of worthless stock schemes. They reap therefrom \$500,000,000 worth of—thin air.

That is not a guess. It is the figure given by the Capital Issues Committee of the U. S. Treasury. And, the Committee assures us that it is conservative.

Moreover, the Half Billion represents just the cold cash that is turned in *every year* by otherwise level-headed Americans seeking a milk-and-honey path to quick riches by the green stock certificate route. It does not take into account the vast economic loss incident to broken fortunes, impaired effort of discouraged investors and to the diversion from legitimate business enterprise of new productive capital.

The Capital Issues Committee, charged with keeping the nation's investment dollars on a work-or-fight basis during the war, has made a searching inquiry into the devious by-ways of fraudulent stock promotion. Its conclusion is that never perhaps in the history of the country has wild-cat investment practice been so flagrant—from coast to coast—as today.

As a result of the government's great war loan campaigns, there are now hundreds of thousands of Americans converted to the idea of saving and investing. With a very great proportion, their investment experience is limited to the good, rock-bottom government war bond.

The Fakir is after them. Thousands of "salesmen" carefully drilled in the gentle art of "selling on the first call" and getting out of town, are abroad.

They will tell you you were a patriot, a real citizen, to have bought Liberty Bonds. However, you've made your sacrifice, the war's over now—and really  $4\frac{1}{4}$  per cent. is no return at all in peace times—let us exchange your bonds for this exceptional offering, positively guaranteed to bring in anywhere from 10 to 500 per cent. in dividends before the year's out—as soon as the oil well is sunk, or the mine shaft completed, or the property developed, or the like.

That is the brand of the stock swindler today: that he is "willing"—as an accommodation to you, you understand—to "accept" your good Liberty Bonds in "exchange" for his worthless stuff.

Happily there is a Government agency today on the trail of the stock sharp. It is the Federal Trade Commission, empowered by Congress to prevent unfair methods of competition in interstate commerce. The Commission may well be expected to look upon the fleecing of Americans

## THE DENTAL SUMMARY

of their Liberty Bonds as decidedly "unfair."

If you own a Liberty Bond you'll doubtless have an early call from one of the pleasant representatives of the sharper outfit. When you do, just drop a postal to the Federal Trade Commission at Washington and tell them about that visit and send them the attractive literature that is handed you. Or, send it in to me and I will forward it to Uncle Sam's men.

It would be interesting to know how much of the \$500,000,000 a year filters out of the state to the detriment of our banks, our merchants and our legitimate business development. Also, how many of us are on the Sucker List.

Let's keep our loose change *at home!*

The University of Minnesota College of Dentistry, through co-operation with the General Extension Division, announces four short courses for graduate students, as follows:

*Course 1: Crown and Bridge Work.* May 19-31. Doctor F. H. Orton in charge, assisted by A. S. Wells and A. A. Pagenkopf. Registration must be made in advance, not later than May 12, and the number of students will be limited to thirty. Fee, \$50.

*Course 2: Porcelain Inlay and Jacket Crown.* June 9-14. Given by Doctor W. D. Vehe and assistant. Registration must be made in advance, and the class will be limited to twenty-five. Fee for the course, \$25.

*Course 3: Local Anesthesia and Oral Surgery.* June 9-14. Given by Doctors T. B.

Hartzell, C. E. Erdman, C. A. Griffith, and assistants. The class will be limited to fifty, and the fee for the course will be \$25.

*Course 4: Prosthetic Dentistry.* September 1-27. Given by Doctor M. M. House, of Indianapolis and assistants. The class will be limited to one hundred students; registrations will be accepted in order of application, and lists will be closed on August 1. Fee for the course, \$75.

RICHARD R. PRICE, *Director.*

### How the Lay Press Sees Dentistry

It is trite now to talk about the relationship of teeth to general health, or to dwell upon the importance of the dental profession. Within the past ten years the subject has received wide discussion. Its most effective publicity has been accomplished through the advertising columns. The magic of tooth pastes has been spread before the world in full-page layouts. Many extravagant claims have been made for the potency of these various products. Many of us, persuaded by the word-witchery of the ad-writers, have invested in this tube or that, with high expectations. Those expectations have not been realized. Nevertheless, this advertising has been productive of immensely wholesome results. The ad-writer has aroused us to the danger of neglecting our teeth. He has impressed upon us the necessity of caring for our teeth. The force of this publicity has given an impetus to the dental profession, too.

**A**N INVITATION to every member of  
the NATIONAL DENTAL ASSOCIA-  
TION to attend the Twenty-third Annual  
Session of the Association October 20,  
21, 22, 23, 24, 1919, in New Orleans, La.  
"Dentistry must play its part in the era  
of reconstruction."

C. V. VIGNES, President

JOSEPH P. WAHL,

Chairman Local Committee



Today American dentistry is unquestionably superior to that of any other nation, and the American people have the best teeth in the world.

Today, the medical profession recognizes dentistry as an associate science, a fact which is in happy contrast to the contemptuous atti-

tude medicine once affected. Yet the relationship of teeth to health, supposedly a recent discovery, is ancient knowledge, from the American viewpoint. We introduce Benjamin Rush. The name is vaguely familiar. Where have we seen it? If we scan the signatures to the Declaration of Independence we'll find it there.

## Martin's Pyorrhea Treatment Tones, Invigorates, Stimulates



**N**OT a violent germicide but mildly antiseptic. It checks and inhibits pathogenic micro-organisms, and helps infected tissue to "come back" and repel invading bacteria.

Simple and definite technic, supplied by dentists who have had long experience in treating Pyorrhea.

### Easily Applied. Results Speedy

Patients co-operate by using Dentaline—a powder—as a dentifrice at home. Contains the same ingredients as the Cream, in milder form.

### Try It Out in Your Own Practice

If you are not satisfied with results after a 30-day trial, what is left of the Outfit may be returned for full credit. You have nothing to lose and everything to gain. Send for the Outfit to try.

#### PRICES

Martin's Pyorrhea Treatment Outfit .....\$7.75

Consists of one (1) small jar Cream, six (6) Applicators, six (6) cans Dentaline (for home treatment), one (1) Martin's pyorrhea Syringe and one (1) tube.

Martin's Pyorrhea Cream, per small jar ..... 2.00

Martin's Pyorrhea Cream, per large jar ..... 3.50

Martin's Dentaline (for home treatment) per dozen cans ..... 6.00

Martin's Pyorrhea Syringe and Tube ..... 2.75

Tube only for Martin's Pyorrhea Syringe ..... .75

Applicators (for use with Broach Holder) per package of six (6) ..... .50

NOTE—The large size jar of Cream is not included in the outfit.

Dentaline, the home treatment, if sold to the patient, is 75c per can.

Dealers  
Everywhere

*The Fansom & Randolph Company*  
TOLEDO, O. U. S. A.  
CLEVELAND FLINT COLUMBUS DETROIT GRAND RAPIDS.

## THE DENTAL SUMMARY

Well, Benjamin Rush was a doctor, and doubtless a good one. He was also an interesting diarist. The expression, "focal infection," may not have been invented in his time, but the thing itself existed. Benjamin Rush perceived how rheumatism was relieved by the forceps and the backward pupil restored to normal.

And he jotted those things down.

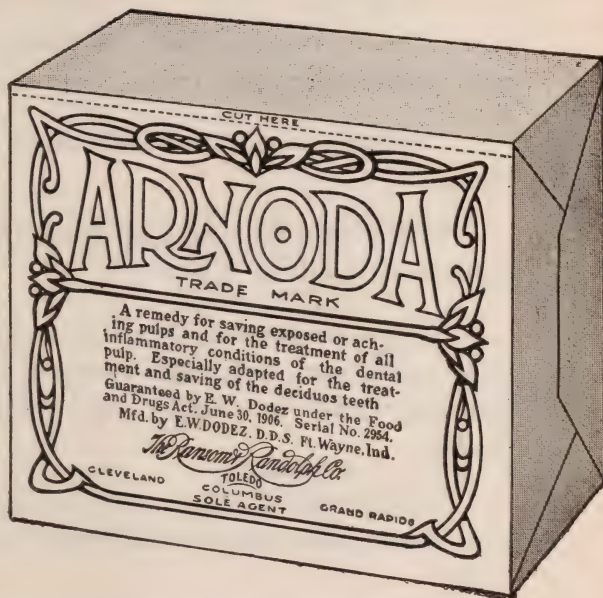
There is nothing new under the sun—not even pyorrhea.

And another old one may be quoted, or adapted: Eternal vigilance is the price of good teeth—and they're worth the price.

—Oklahoma City Oklan.

### Use Arnoda

For lining deep-seated cavities. It is a dependable germicide and non-conducting protector of pulps. Prevents trouble after filling.



REGISTERED U.S. PATENT OFFICE

PREPARED BY E. W. DODEZ, D.D.S., FORT WAYNE, IND.

### Use Arnoda

To absorb and neutralize septic matter in large cavities in deciduous teeth. *Painless.*

### Use Arnoda

To cap aching pulps and relieve toothache at once.

### Use Arnoda

As an adjuvant in devitalizing. Make thick paste of Arnoda mix with any good devitalizer, and insert in usual way. Devitalization will be painless.

**Price, \$1.50 the Box**

*From Your Dealer*

*The Ransom & Randolph Company*  
TOLEDO, O. U. S. A.  
CLEVELAND GRAND RAPIDS COLUMBUS  
FLINT



# The World War

Has opened the eyes of Nations everywhere to the part Dentistry plays in the conservation of health.

“WHAT wonderful teeth these American Soldiers have.”

This was a famous and oft repeated saying in the capitals and cities of Europe.

What was accomplished in a small way during the War must now begin in earnest in times of peace. Nations must be taught that bad teeth mean bad health.

The problems that the National Dental Association must solve now are larger than any it has ever faced.

The National Convention to be held at New Orleans, Louisiana, on October 20, 21, 22, 23 and 24, 1919, will in all probability be the most important in the history of Dentistry.

“DENTISTRY MUST PLAY ITS PART IN THE ERA OF RECONSTRUCTION.”

C. V. VIGNES, President

JOSEPH P. WAHL,

Chairman Local Committee

# REGULAR CONTRIBUTIONS

## THE DENTAL SUMMARY

THE MAGAZINE THAT HELPS

Vol. XXXIX

May, 1919

No. 5

### PARTIAL LOWER COMPOUND IMPRESSIONS WITH THE MOUTH CLOSED

BY SAMUEL G. SUPPLEE, NEW YORK.

**T**HE FACT that many patients will not wear dentures made to supply missing bicuspid and molars in the lower jaw, has caused the failure of a great many upper dentures which otherwise would have been satisfactory.

Inasmuch as this article is intended to deal only with the impressions and construction of dentures for the lower jaw, we will assume that most of the upper natural teeth are intact or present in the form of an upper denture.

A few moments of careful thought in the right direction will convince the careful observer why patients have experienced difficulty in wearing lower dentures. The answer in a few words is the statement that they have been taking large impressions with the mouth open and the tongue down in the floor of the mouth, and expecting the patient to use a small plate made from this impression when the mouth is closed, the teeth exerting many pounds of pressure and the tongue in contact with the roof of the mouth, where it generally is during both mastication and swallowing.

To convince yourself that there is a difference in the buccal region of the alveolar ridge between no-biting strain and normal-biting pressure, just place the thumb and index finger on the outside of the cheek directly opposite to the region of the molars, the thumb on one side and the finger on the other, and squeeze lightly; first close the teeth lightly, then bite hard, and note the change due to the action of the masseter muscle when biting hard. I have failed to find anyone who holds that muscle down when in action.

While these muscular attachments are not connected directly to the crest of the ridge, they are effective indirectly through the medium of the soft tissue and because of this action, plates made from plaster impressions with the mouth open or with the cheek tissues distended, have



to be narrowed down so as to give free play to the muscular attachments so that there is practically no saddle to take the stress of mastication.

#### WHY PLATES HAVE BEEN MADE NARROW IN THE PAST

Consider what must happen when a patient bites down on a plate made from an impression taken with the mouth open. Naturally as the plate is forced down by the power of occlusion, the muscle must raise as the result of the same impulse, and creates a scissor-like motion, so that either the tissue will be cut or the pain be so great that the patient cannot bite hard.



Showing the Supplee tray, preparation of material, and the finished impression for a partial lower.

See lingual border which has been formed by the act of swallowing while biting hard.

By taking the impression of the tissues and muscles when the mouth is closed and under biting strain, we can construct a denture that will extend out on these tissues and muscles, fitting best when the greatest pressure is being applied, and increasing the bearing surface from 50 per cent. to 200 per cent. without any discomfort to the patient.

A plate made from an impression taken under biting strain will fit best when maximum pressure is applied, but it will not fit as well when the pressure is released.

In fact, I have made many partial lower plates that appeared to rock from side to side when testing them with the mouth open, yet patients have found them perfectly stable when masticating.

The writer has been a strong advocate of compound as the best means of taking impressions and has published so many articles to emphasize the importance of understanding the working consistency of compound and the necessity of having proper heating facilities, that it is needless to repeat. These refer only to full denture technic for which the consistency of the material and the observance of detail in technic is very exacting, whereas in partials much of the detail is eliminated and the consistency of material is not of such vital importance. But he would render the best service himself with the proper compound heating apparatus, whereby he can maintain a definite water temperature of about 150 to 160 degrees.

#### BASIC IMPRESSIONS AND FACE PIECE

By studying the illustrations, you will see that the impression consists of two distinct parts, namely, the base impression and the face piece.

The base impression includes the lingual surface and the saddle area to be covered by the denture.

The face piece is laid on later to complete the impression of the buccal or labial surface of the standing teeth or gum, to guide in selecting or setting up teeth.

This face piece is secured by placing the hardened base impression in the mouth, and laying a small roll of softened compound over the buccal border of the exposed teeth or gums.

By taking impressions in this way, we immediately place a great majority of our cases in the no-undercut class, which is simple to handle, for a great majority of the undercuts exist bucco-lingually and do not interfere with the removal of the basic impression.

The material can be prepared and placed in the mouth so that the buccal or labial border of the teeth will be exposed and left till it sets stone hard. Then it can be removed without danger of distortion or breaking. If a very slight undercut exists, the teeth are free to move sufficiently to permit the removal of the impression. The face piece takes care of the apparently difficult part of the impression.

#### DIAGNOSING THE CASE

Your success in handling this method will be determined greatly by your skill in *diagnosing your case*, and planning how you are going to remove and replace the finished denture, before taking your impression.

You should observe these plans very carefully in taking out your base impression and replacing it in position. In other words, the side having the least undercut should be removed first, and the side having the least undercut should be put back in position first.

#### THE IMPRESSION TRAY

All Supplee partial trays are designed on the plan of a flat occlusal plane, and can be secured from the dental depots. They come with



the complete set of Supplee trays, or in sets of eight partial trays. They are made of soft aluminum, so that the tray can be placed between the miscellaneous teeth, and the patient can bite it into shape or at least bend it sufficiently so that the tray will be held firmly in position between the teeth while the base impression is being muscle-trimmed and the material is setting.

The object of the tray is to serve merely as a carrier. It is illustrated, for convenience sake, on an articulator, so that you can see the position the tray assumes in the mouth.



Showing the tray in position in the mouth for partial lower impression both with and without the material.

Note how the contact of the tray in front makes the tray strike the molars in the rear. The material is confined over the lower ridge while the patient *bites hard and swallows two or three times*, a very important factor in taking a desirable impression of the lingual and buccal border for a lower plate.

This tray should be used even if you are going to make a saddle for one side.

#### ADJUSTING THE TRAY

Fit your tray regardless of the buccal or labial portion of the teeth or gums, excepting to see that it does not touch the ridge or extend out into the cheek or tissues so as to distend them in any way.

Have the patient close on the tray, pressing hard enough to bend it so that it can be held firmly without pain, due to pressure of the tray on the tissues, or strain on the teeth.

The No. 6, Partial Lower Supplee Tray, is designed to take all cases where the bicuspid and molars are missing, and the No. 5 is used in cases where the molar may be present.

## PREPARING THE MATERIAL

Place the material into the tray so that it will approximate the form of the *proposed plate*, without any regard for the buccal or labial surface of the standing teeth, using sufficient quantity to fill the space between the tray and the ridges.

It should be warm throughout, but that portion next to the tray should be slightly cooler than the portion to come in contact with the tissue.

The preparation of the material is the most important part of the process, and should be very deliberate.

## FASTENING COMPOUND TO THE TRAY

To insure the compound adhering so that it will not leave the tray when you are taking the impression out of the mouth, the tray should be thoroughly dried and the surface of the compound should be passed over the flame until it is sizzling hot before placing it in contact with the dry metal.

Cool the compound next to the tray by immersing the tray in cold water after the compound is placed on it and shaped to the approximate formation; then pass the surface that is to come in contact with the teeth and tissues over the flame to soften it to a flowing state. Dip this surface in hot water before placing the compound in the mouth, and have the patient bite it to position. You have thus established three strata of compound of different consistency and temperature, which is very advantageous.

## TAKING THE IMPRESSION

In taking the impression, place the tray and the material in the mouth in the same way as you propose to insert the finished denture, carrying the tray three-quarters of the way to position and then have the patient close and drive it the rest of the way. Caution the patient to hold the jaws firmly closed, then swallow twice, give the lip and cheek movements and then continue to hold firmly while you lift the lips and quickly force all material away from the buccal or labial side of standing teeth, using the finger or an instrument.

Sufficient pressure should be brought to bear over the cheeks to reduce the compound to the desired fullness while in a flowing state.

After the excess is removed and the buccal and labial surfaces exposed, have the patient give the lip and cheek movement a second time and massage lightly; then let the compound set till it is stone hard, being very careful not to permit the patient to open until this is accomplished.

*Ice water or a cold air syringe always should be used before removing the impression.*

## EXPOSE THE BUCCAL SURFACE OF THE TEETH

The Supplee tray is designed especially for this work, and is so formed that you can push the compound to the edge of the tray with



the index finger, cutting the excess away in a scissor-like manner, while the compound is still warm.

If the teeth are not exposed so as to permit the impression being readily removed, let the compound set until it is sufficiently hard that you can just dent it with the finger nail. Then it is very simple to use a lance or the small blade of a pen knife to cut the compound away before it becomes stone hard.

*Caution:* The patient must keep the teeth closed firmly on the back of the tray during this operation.

If care has been exercised to see that no compound has covered the buccal or labial surface of the standing teeth, there will be no "drag" to



the compound, particularly if you are careful in removing the impression to carry it *back* first before raising it.

To insure against this, when the basic impression is removed from the mouth, it is wise to dip the impression in cold water for about two seconds and quickly place the impression back in the mouth and press firmly into position with finger pressure.

#### EQUALIZE BITING STRAIN BEFORE CORRECTING THE IMPRESSION

If there are defects in the impression, due to lack of material they can be corrected readily with the tracing stick.

*Caution:* Before correcting a partial impression, it is absolutely essential that you make sure that the patient has not closed forward or created a muscle-strained condition when driving the impression to position. Otherwise you will have difficulties in making corrections should they be required. To insure against this, it is wise to trace

sufficient compound on the back of a compound biting block to indicate that patient closes each time in the same place.

To appreciate the importance of this, one must thoroughly understand the principles outlined under the title of "Muscle Strain" published in one of the dental journals some time ago.

#### FACE PIECE COMPLETES THE IMPRESSION

The face piece never should be made until the corrections to the base impressions are complete, when it takes but a few minutes to place the impression back in the mouth; have the patient close and lay a small roll of compound under the lip or cheek opposite the buccal or labial border of standing teeth, then draw the lip over it and press on the outside with the finger.

This will conform the compound over the buccal and labial surfaces and make a nice joint with the rest of the compound impression. Let this cool thoroughly. When removing the impression, ignore this face piece by taking hold of the handle of the tray or some part of the basic impression and remove it in the same manner you would the finished denture.

In the majority of cases, the face piece will remain in position or open up sufficiently to let the impression pass over the bell-shaped portion of the teeth.

As soon as you can take the face piece out of the mouth, it should be laid back to place on the impression, so that if slightly bent it readily can be pressed back to position. The pressure should be brought to bear directly over the right-angled points that were cut for the purpose of making a clean and definite point. If ice water is used, there will be no danger of its bending, as the compound will break clean before it will bend.

#### DESIRABLE CASTS

Casts made from these impressions will present the perfect contour of all standing teeth, to guide in selecting or setting up teeth, and as much of the exact lingual formation possible to maintain and still insert the plate without filing or fitting.

The additional time expended in taking an impression of this kind will be offset by the time that otherwise would have been expended in adjustment of a denture made from a plaster impression.

In making dentures from impressions taken by this technic, it is possible for us to make the denture cover the entire saddle area indicated by the muscle trimming without any discomfort to the patient, and in the majority of cases, it would be from two to five times the area possible to maintain when an impression has been taken by the old-fashioned plaster technic.

The extent to which this rule will apply to the lingual portion will depend a great deal on the consistency of the material and attention to



details in technic, a matter into which the writer has not attempted to enter because of the limitations of space devoted to this paper, but those who would like to know more of the details for partial upper as well as the partial lower, can procure same in booklet form.

1 Union Square.

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## PSYCHOLOGY IN RELATION TO HUMAN LIFE.\*

BY G. E. HARTER, TOLEDO, OHIO.

Many men of many minds make up this modern world of ours, the psychology or mental activities of which present to the observer much total disagreement and very little harmony, due, largely, to a mutual misunderstanding of the terms employed by proponent and opponent of varying opinions.

In order that there may be as little misunderstanding and consequent disagreement as possible among us this evening, a few definitions of words and terms will be given at the outset, in order that you may know what is meant, at any rate. Without that knowledge none of my hearers can determine even for themselves whether they disagree with me or not. And I wish to state right here and now that my whole aim is to make myself clearly understood, since it cannot possibly make the least difference to anybody except yourselves whether you accept any or all of that which is given or reject it *in toto* or in part.

There is already far too much opinion, belief, dogma, unsupported conjecture, too much creed in the world of mind, for me to add anything to it. Therefore, unless that which is to be said appears to you necessarily and obviously true, it is much to be preferred that you reject the whole of it.

To begin, then, with our definitions:

*Psychology* is the science and the philosophy of the Facts and Activities of Consciousness.

Science affirms that which *is*, or appears to be; Science answers the question, *What is?*

*Philosophy* affirms and attempts to prove the Relations that exist between various facts as affirmed by Science; Philosophy attempts to answer rationally the question *how* things that are came to be, and *how* they are related to and affect each other.

*Consciousness* is the Faculty of Knowing. It is not Knowledge; it is only the ability to acquire knowledge.

*Mind* is Consciousness drawn to an Active Focus. It is not a simple but a compound Power, made up of Will, Feeling and Thought.

*Intellect* is that faculty of the Mind evolved in order that the Self may come into touch with, understand and control material, or physical,

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\*Delivered before the Canton, Ohio, Dental Society, September, 1918.

particularly the external or apparent aspect of Objective Phenomena or Things.

*Man*, or the Self, is a Stable Center of Consciousness, individualized by experience, capable of Infinite Expansion.

*Self-Consciousness* is the Power of the Self to know itself as the Knower.

The Self transcends the highest possible conception of Self. This seems necessarily true, because the fact of knowing anything requires first of all that there shall be a Knower, and the Knower obviously is greater than, stands above, the thing known; a conception cannot exist or take form unless there is a Conceiver. The greater always includes and transcends the lesser. All knowledge is greater than some knowledge; the Mind is greater than any or all of its activities.

Consciousness is the one great, primal, basic, fundamental Fact of Life. In fact, Life may be called the sum total of the activities of and within Consciousness.

Everything that lives is Conscious, and the whole world, from the smallest speck of mist in the sky, from the tiniest atom visible or invisible to the most powerful microscope, to the most finely organized and most highly developed Mind of Man, is alive, is conscious, each in its own sphere, each on its own plane.

Consciousness is universal, life is unlimited. There is no such thing, never was such a thing, never can be such a thing, as Death, in the sense of utter destruction.

Consciousness, and Life as its activity, never had beginning, never, by any possibility, can have an ending. I am asking you to try to grasp the stupendous fact that there is but one word that can be used to define Consciousness and Life, and that word is *Endurance*. No beginning, no middle, no youth, no age, but an Endurance that flows from eternity, which means a limitless, beginningless Duration, to eternity; which means, again, limitless, endless Duration.

Now for another rather stupendous idea: The whole immense, boundless, limitless, beginningless, endless Universe is *One*; Life is *One*; Consciousness is *One*. Kosmos is one and indivisible, and not many. The Consciousness that Now Is is the same Consciousness that always has been; the Life that Now Is is the Same Life that always has been. And these two, Consciousness and Life, stand in relation to each other as Energy and the Expression of Energy, as Father to Son, as Eternity to Time, which also are one. Eternity is boundless, beginningless, endless Time; and Time is Measured or Intellectualized or bounded Eternity, really not at all cut off from Eternity, but simply measured out within Eternity. Just as this city, with its metes and bounds, is not



at all *cut off from* the county, the state, the nation, the continent, the globe and the solar system of which it is a part, but is simply measured, limited, set apart, *within* those larger measures of area, the county, the state, the nation, the continent, globe, solar system and universe.

This idea or conception of oneness or unity is necessary if we are to come into any sort of logical, rational, satisfactory idea of what Man really is, and of what is his place in this universe of ours. It may not be possible to form any mental picture that can give us an image in substance or matter of universal, limitless consciousness, but, possibly, we may think of the whole universe as existing or floating in a highly elastic and very sensitive fluid, exceedingly strong, durable as eternity itself, capable of receiving and holding forever all impressions made in it; and of every material atom—pebble, rock, shrub, tree, animalculæ, horse, lion, rabbit, elephant; every child, man, woman, family, tribe, state, nation, planet, solar system, universe, as so many points of concentration or foci *within* and making part of this highly elastic, highly sensitive, ever-enduring fluid.

In thinking of these organisms, from atom to man, try to avoid the error of considering them as other than foci or centers, as it were, *within* this body or mass of fluid. As an illustration, let us consider a body of water; river, lake, ocean, what not. It is not at all difficult to stand upon the margin of a lake and realize that the waves that lave the shore at one's feet are an integral and intimate part of the water that rises and retires in rhythmic motion on the other side of the lake. Now, just allow your conception of the unity of the water in the lake to expand, widen out, until you can imagine yourself, whoever you may be and wherever you may be, as standing, not on the margin of this Limitless Ocean of Plastic Consciousness that extends endlessly in every direction, but in the very center of it, for the universe of consciousness was described by the Ancient Teachers of man as a Circle whose Center was Everywhere that a focus of consciousness existed, while its circumference was nowhere.

Now, to carry a little further our crude illustration of the water in a lake, let us suppose that, owing to certain atmospheric conditions that have to do with pressure and other phenomena, congelation or freezing, as we call it, takes place, and we have lumps of ice floating in the water. No one need tell you that while those lumps of ice appear to be apart from the water in which they float, that they are still parts *of* it. All that is necessary is to alter the pressure a little, or raise the temperature, as we say, and the lumps disappear, they melt, dissolve, and soon cease even to seem to be apart from the water in which they were formed and into which they disappear.

Now, all Forms are simply lumps of ice, as it were, merely concentrations, in this great sea of matter or substance, which is the Body, or clothing, as Carlyle would call it, of Universal Consciousness, and they are brought together, focused, by a phenomena very similar to that which we call freezing. First of all there must be a vortex in consciousness. We call it a Psychic Vortex, because there are two elementary forces at work, Consciousness, manifesting as Thought; and Feeling, manifesting as Attraction. Thought and Feeling being two fundamental principles or aspects of primordial consciousness.

Of course, there is no difficulty now in understanding that these vortices exist and take form and exercise their wonderful function altogether within the sea of universal ether, which is the name we have agreed to use when we speak of the limitless sea of sensitive, tenuous, elastic fluid in which everything that *is* lives, moves and has its seemingly limited being—and not at all apart from it.

We have agreed to understand that Man is a Center of Consciousness within universal consciousness; and now we must understand why we cannot define man as a Body. The center of consciousness that is Man must exist and exert energy—the phenomena of pressure in the case of the formation of ice—or no vortex could be formed, no substance drawn into that center, and no Body generated. However, this is somewhat aside from the present branch of this great subject, in which all thinking men and women should be interested vitally, which, unfortunately, they are not; and we shall return to our muttons.

Let us take up once more our illustration of a lake and the water within it. When a lump of ice appears, the entire body of water is affected; part of its mass has been so forced together that it coheres, rises above the ordinary surface of the water, floats, as we say, which means that there has been a fall in the height of the surface of the water all around the margin of the lake. No matter how small the lump of ice may be, there is a correspondingly lower level of water everywhere. Every atom, every drop of the water is affected.

Now, return to the body of consciousness, with its envelope of ether, in which all forms are congealed or generated. The ether or mass is affected as the water is affected, by the generation of forms within it; but Consciousness is affected by quite other forces. Consciousness is the basis of Mind; and mind is Thought, Feeling and Will. That is, Thought, Feeling and Will are the component parts of our psychic organism, that part of Man that we study under the name of Psychology. Of course, there is a psychology of minerals, of plants, of animals; but our subject today is limited to a consideration of a very small sector of the psychology of Man.



Consciousness is directly affected by all activities within its domain. Activities within consciousness are psychic activities. They are the activities with which the Mind—Thought, Feeling, Will—are concerned. As every unit of the water in the lake is affected by every change in the mass, so every unit, every atom, of Consciousness in the Universe is affected by every psychic activity anywhere.

Camille Flammarion, the greatest of French astronomers, is authority for the statement that the explosion of an atom of hydrogen on Capella (so far away from the earth that light, traveling at the rate of about one hundred and ninety thousand miles per second, would require seventy-two years to span the distance), would be distinctly felt and recorded upon astronomical instruments in observatories here in the United States, without the slightest loss of energy. It should not, therefore, be hard for any of us to accept a similar statement with regard to psychic explosions, of a much higher nature than physical ones, to the effect that a single ebullition of anger, malice, hate, jealousy, is felt throughout the entire ocean of consciousness that unites all units of an endless universe into one psychic body, one Vast Common or Cosmic Mind.

Now we approach a point of departure from so-called official or orthodox science and philosophy, and enter upon a domain that our most advanced thinkers and research men are beginning dimly to sense. It is a field that offers much to the unprejudiced explorer, one sure to yield much data that must go far toward the solution of the greatest problems thus far encountered by those who would solve the mystery of human life. It may be called, for want of a better name, the Realm of Spiritual Dynamics.

We have drawn something like a parallel between the formation of ice in water and the segregation of individual units of consciousness into separate forms, that are separate only as forms and not at all separate as to essential nature; and separate only apparently while the forms endure. But there is a very great difference. Ice is formed by the action of forces outside, or at least partially outside, of the atoms of the water affected, while living forms, of plants, animals and men, are generated, extruded or thrown out by the action and reaction of energy inherent in the Unit of Consciousness itself. Man, as you know, is such a unit of Consciousness; he is a stable Center or Vortex or Focus in Universal Consciousness, not apart from, but a unitary part of that fundamental fact.

The ultimate source of energy, or life, has been the greatest problem ever approached by the human mind; and very little progress has been made by those who have attempted to adhere to the old lines of mechanism and determinism. Yet all becomes clear the moment we

step aside from those paths beaten by the feet of hundreds whose honest toil has ended only in disappointment. We must cut the Gordian knot, since it defies all efforts to untie it according to the rules of official investigation.

The question is: What is the source of life or energy, and how does it operate to produce living forms? The answer is: There is no such source. Life or Energy has no beginning nor any possible ending. Life inheres in the Unit of Consciousness itself. It is that unit, and that Unit *is* Life or Energy.

Life does not act *upon* Consciousness as atmospheric pressure acts upon water to produce ice. Life acts *within* the unit of Consciousness to produce Forms of living things.

Now, we have said that man is something more than a mere unit, similar in all respects to all other units. We have said that he is a Stable Center, or Vortex, or Unit of Consciousness, *individualized* by experience. This means that the unit of consciousness, or latent mind, or capacity to know, that is the very center of man's being, has acquired certain definite characteristics during its endless ages of experience, and that these characteristics differ in each individual, having been brought about by varying reactions toward and against other units with which it has come into touch.

To understand this seemingly, but only seemingly, intricate and difficult proposition, we have only to think of this assembly of men and women, each of which is such a unit, listening to the sound of my voice and each trying to take a little good out of what may seem only a mass of words to many. No two of you are reacting in precisely the same way. Some must be ready to yawn by this time, others may be genuinely interested, others antagonistic, others skeptical, others indifferent. The attitude of your mind toward what is being said is what is called Reaction. Your coming here is an experience; your listening to me is another experience. The mental attitude that each assumes toward what is being said is a Reaction to those experiences. That is, it is a mental action, therefore, a Psychic Action, therefore an Activity in Consciousness. Just what that reaction may be depends upon the state of your mind, and the state of your mind depends upon the result of countless ages of experience through which You, and your Mind, have passed: the result upon you; and that net result of all your past is what makes up Character. And character is what you *are*, not what you seem to be. What you seem to be is only your reputation; your character is what you are, and what you are is shown by what you do. As Bergson says: We think with only a small part of our Self; but the Whole of the Self is shown in every act, were we but able to read its indications.



Now, the activity that we have called Spiritual Dynamics differs not at all from ordinary physical dynamics. As a matter of fact, there is no such thing as physical dynamics of itself. Every physical activity that we see taking place about us every day is the result of some unseen activity on the plane of Consciousness or Spirit. However, in order that we may understand the unseen a method of study has been formulated and tested out with relation to action and reaction, and that method of study is called the Law of Correspondences. We may study unseen forces by making ourselves familiar with their visible or knowable effects.

One of the so-called laws of so-called physical Dynamics is this: "Action and Reaction are Equal and Opposite." If you hold a gun to your shoulder and fire the charge, you have released a highly elastic gas that expands equally in all directions, its force depending upon the resistance offered to its expansion. The pressure of that gas against the breech of the gun is precisely equal to that exerted against the bullet. Part of this reaction is absorbed by the mass of metal forming the breech, part of it reaches your shoulder and passes through your body to the earth and the air, and goes on forever, affecting every minute atom in the mighty universe.

Let us try to use this familiar example of physical Dynamics and see if we can apply it to a solution of the basic problem of Spiritual Dynamics, or Psychology in Human Life. Every thought that every one of us thinks corresponds to the discharge of a loaded gun. Every emotion is such an explosion, every feeling is such an explosion, every act. The force of each such explosion depends entirely upon the amount of concentrated energy we put into and behind it.

As you sit here, listening to this paper, each of you is forming certain thoughts and feelings with regard to it and its author. These are going out from you as arrows are discharged from the bow. Every one of them has its due effect upon every other mind in my audience, and upon me. If you are indifferent or antagonistic, I feel it; so does every other mind present; so does every other mind in Canton, in the State, in the Nation—in the Universe. If you are receptive, or charitable, or good-natured, those things also have their effect so far as Universal Consciousness extends. Now to apply the other half of our Law of Dynamics, *Reaction*.

Every thought that you send out, favorable or unfavorable, wise or foolish, kindly or malicious, loving or hateful, beneficent or maleficent, not only produces its effect upon all other units of consciousness everywhere, but its *Reaction*, being equal and opposite, produces precisely the same effect upon *you*, upon your mind, upon that Stable Center of Consciousness that is *Yourself*.

The Character with which you came into this audience tonight was the net and the total result of all your past experience. The thoughts you are thinking tonight, the emotions, the feelings that you are sending out, are reacting upon you to modify, alter, to strengthen or weaken that character with which you are to go on through this period of life, and to carry with you through an endless progress in the future; for, as Bergson says again: "Man's progress is toward an infinite goal that ever recedes."

Now you understand what is meant by the statement: "Not a sparrow falls without His notice"; and that other significant one: "Every hair of your head is numbered." Everything has its appropriate place and value in the universe.

It would not be fair to stop here, without going at least one step further in the conclusion that must have forced itself upon your minds—that each of us is wholly and solely responsible for what we are and what we are to be. In ordinary law Intention Makes the Crime. So in the Greater Law. None of us possibly can know the results produced by our acts, thoughts and feelings; but we can and do know our Intentions. Our Motives are wholly under our control; and for them we are responsible. True, the violation of law brings its recompense, just as does obedience to it. Ignorance of the law excuses no one. But the knowing, wilful, malicious, hateful, intentionally-harmful violation of law brings with it, by the law of Spiritual Dynamics, or simply the laws of Psychology, far more serious consequences in limitation, in obscurity, in pain, in suffering, than does the ignorant neglect of its behests.

No man can wilfully, knowingly, intentionally interfere with the rights of others to their detriment without paying an exactly-balanced penalty. No man can work for the good, the comfort, the welfare, the progress of others, without himself reaping all that he is sowing. Men who give their lives and all they have for the good of the world, the young men over in France today who are giving their all freely upon the altar of Individual Liberty, are sure to reap such increase as only the gods may know; giving all they shall receive all, for "They who lose their lives for My sake shall find them." They have flung away their world that others may find their world.

I thank you.

N. B.—Correspondence is invited from those interested in these subjects

—G. E. H.



## EXTRACTION OF TEETH\*

BY J. P. HENAHAN. D.D.S., CLEVELAND, OHIO

**E**XTRACTION OF TEETH is a subject in surgery with which the people of all the world have had to contend since the beginning of history. In all this time it has been characterized by an uncertainty of results. The people of all times, and all climes, have wrestled with the problem and the result of their efforts, as laid down in history, is exceedingly interesting.

Savage peoples have resorted to methods which at first glance might be considered as worthy only of savage people, but when we study further and note the methods employed by more enlightened races, we must say that on the whole there was not much choice between their respective methods. Today, after the passing of the ages, we find the dental profession, as a whole, contemplating this operation with the same feeling of uncertainty, because, even with improved methods, it has been shown that almost unlimited experience is necessary on the part of the individual operator before he can expect to feel confidence in contending with the limitless anomalies which present.

The development of instruments with which to perform this operation scientifically has proceeded since the time of Esculapius, who probably lived between the twelfth and thirteenth centuries. The instrument first described in history was called the "plumbeum odontogagon," an instrument fashioned out of lead. It was deposited in the Temple of Apollo, at Delphi. With the passage of time we have found the men of all nations fashioning instruments for the performance of this operation. Drawings of these show them to be most extraordinary and we wonder how any degree of success could accompany their use.

On the part of the patient we note universal fear of this operation. We note it in the very young and the very old. It would seem as though this fear is hereditary, handed down from one generation to another as the result of the suffering experienced through this operation.

There never will be a method evolved which will entirely eliminate the uncertainty of this operation. There is unlimited possibility for trouble because of abnormalities of development, position, texture, formation, etc., in connection with any tooth.

Extraction always has been, and always should be, considered an operation to be resorted to only as a final remedy. It is at the same

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\*Read before the North Central Ohio Dental Society and the Rehwinkel Dental Society, 1919.

time an operation which, if neglected when necessary may allow the perpetuation of conditions which may cause very dangerous results.

The dentist should be absolutely fair when advising for or against this operation. He should be impartial, influenced by nothing but the benefit to be derived by the patient as the result of his advice. Insofar as possible his advice should be given because he possesses definite knowledge. As a result of lack of definite knowledge in this respect we have seen during the last few years many patients suffering from the most serious maladies, often traced, without the slightest possibility of doubt, to infections arising in teeth which should have been extracted instead of being treated and repaired.

If a dentist is advising a patient in regard to a tooth, and in his mind this tooth should be removed, he should make his opinion known to the patient. If he entertains any doubt that he will be entirely successful in removing what appears to him to be a particularly difficult tooth, in fairness he should refer the patient to one of greater experience, and with definite instructions as to what is to be done.

The dentist is not always completely successful in his attempts to remove a tooth. But when he has been unsuccessful, and the object for which the tooth was to be removed has not been attained, then he should call in help. To mislead a patient into the belief that the tooth has been entirely removed, when he knows the contrary to be true, is committing a double crime, one against veracity and one which causes a confiding patient to go on indefinitely, suffering intensely, in order to cover his own false pride.

In the matter of correcting public opinion the dental profession has much to do. The universal opinion is that the removal of a tooth is always a simple matter. They are accordingly not willing to give much credit in any case for successful completion, but when the case proves difficult they may consider it as unsuccessful and are more liable to give censure than for any other dental operation which may be performed.

The profession is, in a measure, responsible for this state of affairs, because little effort is made to correct it.

In applying rules for extracting to any tooth much will depend upon the tooth being normal in shape. The uncertainty of result is increased by any abnormality in curvature, or whether the tooth has been devitalized for a few months, or, perhaps, for several years, with its consequent drying out, impairment of texture and consequent brittleness. It is evident that in the latter case if care is not exercised much destruction of gum tissue and process will result, a condition which is often only partially corrected by the formation of new tissue, leaving a depression unsightly and annoying to the patient.

When laying down rules for the removal of teeth one must remember the limitless variety of conditions that are to be met, so that on the whole rules can be made to apply only to teeth normal in every respect.



Beyond this, instruction may be given only in reference to peculiar cases, and one must rely upon his ingenuity to help him out with difficult cases.† There is no branch of dentistry which calls so suddenly upon one's ingenuity to help him as does the operation of extraction. One rule there is, however, which applies to every case. "Divide every operation into two parts: *First*, loosening the tooth; *second*, removing it from the socket."

We can expect the tooth, normal in outline and position, to be dislodged from the socket by the application of force properly applied to the tooth itself. When it is malposed it will likely be necessary, in order that the supporting tissues be not unnecessarily injured, to eliminate as far as possible all obstruction by surgical modification of supporting tissues. Impacted molars and cuspids are examples of this type.

There are many conditions which present to a dentist in the way of extracting which, on account of the ever-present element of uncertainty, come as a surprise, and while the dentist is thinking of his next step, the patient, unless anesthetized, is also doing some thinking, and if the surprise is as great on his part, it is likely to be succeeded by a line of thought not born of confidence in the dentist. This is where the dentist must deport himself with calmness. He must not, without reason, as is often the case, surrender to the baseless opinion of the patient and take a reward of censure whether merited or not.

He must then either successfully complete the operation, leaving a good result, or he must convince the patient that there exists a real reason for the increased difficulty. The X-ray is a valuable aid in this respect, and as a rule the reasonable patient is not only willing but anxious to assume any added expense which will aid in producing better results.

From the viewpoint of the exodontist we may note the following restricted summary of tooth conditions:

*First*, vital teeth or teeth only recently devitalized with natural texture unimpaired.

*Second*, teeth devitalized for a long time with structure dried out and consequently brittle or chalky. This class often is characterized by bony adhesions or ankylosis, due to condensive osteitis.

*Third*, teeth in normal position.

*Fourth*, teeth in abnormal position due to crowding or impaction, or teeth not fully erupted.

*Fifth*, teeth normal in outline and development.

*Sixth*, teeth abnormal in this respect due to fusion, hypercementosis, or with roots abnormally curved or bent due to pressure.

*Seventh*, roots exposed to view.

*Eighth*, roots submerged.

*Ninth*, teeth complicated by disease of supporting tissues, such as necrosis of the alveolar process.

†In a paper published in THE DENTAL SUMMARY, January, 1918, the author's methods and instruments used in some of these unusual cases, are described.

Teeth in class two are the ones which will be liable to cause most trouble in the attempt at extraction. They may also bear the characteristics of class six in addition, when the difficulty is increased many fold.

In the case of an anterior tooth, central, lateral, or cuspid, which has been reamed out for the accommodation of a dowel pin, we have a problem which needs great care. The root is only a shell which will bear no crushing. This root must be dislodged by breaking up adhesions, one side at a time, by inserting an instrument alongside of the root. This prevents the biting-out of bone, periosteum and gum tissue, which results when forceps are used. *An alveolar forceps is an instrument which never should be used by a dentist who has any regard for his patient.*

Teeth in class four when impacted usually are to be regarded as extraordinary cases. The patient always should be informed beforehand of their importance and the necessity of post-operative treatment.

These operations should be performed only after complete examination, involving a consideration of the tooth and all contiguous tissues. The bone in which the impaction rests should be considered fully, as consisting of external hard plates and cancellous tissue in the body of the bone. The socket also, is a thin plate extending down into the cancellous tissue. The lining should be conserved carefully if possible, and in any case should not be destroyed to a greater extent than necessary. The more nearly any tissue approaches the normal the greater is its resistance to infection.

Development of extracting technic, whether to be applied to ordinary or extraordinary cases, should be toward the conservation of supporting and contiguous tissues, and the protection of the patient from shock. Freak operations, depending upon speed and the spectacular as their claim for adoption, should be at least carefully considered before being tried out on the patient who expects an operation which is the result of experience.

The man practicing general dentistry will do well to limit his extracting to cases which examination leads him to believe can be performed without great difficulty; even then he often will find plenty of trouble finishing what he has begun. This is most often the case when a lower first or second molar, devitalized for many years, is undertaken. It is firmly set, ankylosed, and unyielding. It often requires great force to dislodge it and the brittleness of the tooth, added sometimes to excementosis, creates a problem which is hard for the most experienced to solve.

#### POST-OPERATIVE TREATMENT

The care of the mouth after extraction of one or more teeth should receive great attention, as in some cases infections set in which cause great pain and even general symptoms of infection.

What is termed as a dry socket is a socket from which the blood clot has been removed leaving it open and unprotected. These wounds



should be cleansed at least once every twenty-four hours and loosely packed with an obtundent dressing—such as orthoform, or better still chlorotone. The latter may be found admirably carried in a well-known proprietary which we use, namely, Dentalone. I advise this preparation because of its efficiency as an antiseptic as well as obtundent. It retains its efficiency for twenty-four to forty-eight hours.

The general subject of extraction today comes in for a great deal of discussion, pro and con.

A certain element in the medical profession is offering considerable in the way of criticism of what is termed the promiscuous extraction of teeth. This element is supported in this sentiment by a corresponding element in the dental profession. They argue that patients present to them who are toothless as the result of advice received to the effect that removal of teeth would cure certain diseased conditions. If they are to make their point they must make the picture as bad as possible in the eyes of their audience. They would create the impression that whole mouthfuls of good teeth had been removed in these instances without showing good result.

Now, all sensible men are entitled to their opinion and always will find a receptive audience, but, on the other hand, sensible men cannot be expected to accept every idea advanced without proof.

The dental profession never has known a time when its members were so well able to pass sane judgment on a case as they are now, and I do not believe that there is a reputable dentist in the country who could be induced to extract an entire set of teeth, no matter how insistent may be the request of the patient or medical advisor. I never have heard of one definite case where proof was presented that such has been done.

It is impossible for one medical man or dentist to pass judgment on the condition or quality of a set of teeth six months after they were extracted by another man. So, when we hear this type of argument advanced let us ask for the proof before we accept the statement.

To refer back to the dentist who blindly supports this wail, I will say that unfortunately there are still a few practicing who do not know the meaning of focal infection of dental origin. To this man of course there can exist no good reason for the extraction of any tooth.

For several years, now, research has been carried on in this direction at the Research Institute of the National Dental Association, in Cleveland, as well as in several other institutions with results which go to prove the direct connection which certain systemic disease conditions in remote parts have to do with infections about the teeth.

It would be impossible, of course, to carry out research in connection with every case, but when we employ every other measure at our command, such as the X-ray, galvanic current, medicinal treatment, etc., we are acting scientifically.

If upon examination, a tooth, or several teeth, are found to be in such condition that we suppose them to be either entirely worn out or only have a short time to endure, then if we suspect them of being connected in any way with a systemic disease condition we are justified in removing them.

We cannot be expected to be correct in our diagnosis every time; no medical man ever lived who was. However, I think that in a condition such as fast-failing sight, the dentist makes, by far, the greater mistake when he states sagely that the abscessed cuspid tooth has no connection with the trouble, than does the man who advises its removal, though no good results follow.

#### ANESTHESIA

Anesthesia in dentistry today is developed to such a stage that some form of it is employed in practically all offices; but like all other things, there is still room for improvement in the general order of things.

Anesthesia has made possible many improvements in operative procedures and permitted the abandonment of many practices which we have had to employ in the past, such as the use of arsenic for devitalization.

Nerve-blocking anesthesia has been shown to be entirely satisfactory for use in a very large proportion of cases.

The danger attending the hypodermic introduction of a local anesthetic when cocain was commonly employed has been eliminated, and with novocain-suprarenin we seldom hear of bad effects being produced. Nerve-blocking anesthesia is one of the greatest blessings which has befallen dentistry. It fits more cases than any form of anesthesia ever produced. Applied to extraction the majority of cases may be completed successfully through its use.

Personally, I prefer the use of  $N_2O$  &  $O$  for extraction purposes, but many men are not in position to employ this agent. I consider it, however, applicable to a greater number of extraction cases than any form of local analgesia, no matter what drug is employed.

Some form of anesthesia always should be employed in the operation. No dentist today should ask a patient to suffer what he would not himself suffer. Those who are not familiar with nerve blocking easily can get the information by attending a post-graduate class.

1023 Rose Building.

#### DISCUSSION

DR. FRANCIS, Toledo: My discussion of Dr. Henahan's paper necessarily will be limited, owing to my agreement with him on practically every point, and the thorough and comprehensive manner in which he has presented the subject. Whatever I may say will simply be a reiteration of what the essay contains.

In my opinion, there is no branch of dentistry in which the profession is so deficient, and the laity so poorly informed, as the one we are considering. As Dr. Henahan has said in one of his previous papers, "The dentist sits back and acts as if a joke had been sprung when someone says he wants a tooth yanked." With the rapid advancement in



other branches of our work, is it not reasonable to expect that this should receive the same consideration?

It is true that there are cases in which we may resort to all the devices known today, intended to throw light upon the character and outline of the tooth to be removed, and still there may remain a great deal of uncertainty in the attempt to extract such a tooth. If more careful study were given to the extraction case in hand, instead of practically no consideration, as is often the case, a great many "accidents" might be avoided, and by such examination, a more practical anesthetic agent employed, whereby shock and fear might be greatly eliminated.

Fear is the great bug-bear of dentistry, and especially is it true in the extraction operation. We are living in a nervous, hysterical age, and our patients will not tolerate pain as their ancestors did centuries ago. I have oftentimes been told by my patients that they fear my chair more than they do the operating table. But when we consider the barbarous methods which have been employed in past history, and not entirely eliminated by some operators even now, we readily can understand why the average patient possesses such a fear of this operation. With anesthesia developed as we have it today, there is no excuse for inflicting pain, and every dentist should equip himself to this end.

Of all patients who should receive the most careful and painless operations, children stand foremost. I never deceive a child, or allow a parent to do so, as to the nature of the operation, and I usually find after operating once I have no trouble thereafter. I rarely employ any other method but gas-oxygen on these patients. In fact, I think gas-oxygen more nearly approaches the universal requirements for the routine practice of the exodontist than any other anesthetic agent.

One thing I would like to emphasize very emphatically, and that is the honesty of the dentist to his patient. Should he have an accident in the attempt to extract a tooth, and finds it is impossible to get the tooth all out, tell your patient so. Do not let him believe it is all out, and possibly suffer indefinitely, ignorant as to the real cause of his suffering, and then present to some other dentist to be told the truth, the consequences of which we all know are not beneficial to one's reputation. Cases of this nature are constantly being presented to the exodontist. It is no disgrace to say you are not equipped to handle these abnormal cases, and you will stand much higher in the patient's estimation.

DR. SARGENT, Toledo: I wish to compliment Dr. Henahan on his excellent paper. I have enjoyed it very much, and I agree with him on everything he has said. It is rather difficult to discuss a paper when one so heartily agrees on all points contained therein.

Personally, I have no special methods which I adhere to, and no choice as to anesthetics, except as the individual case presents itself to me. No one method is fitted for all conditions. Different people call for different treatment.

The selection of the anesthetic for certain kinds of people is of great importance. We should use the one we think would be the safest and best for the particular case in hand.

Hysterical people are poor subjects for local anesthetics, not from a viewpoint of danger, but because of their mental condition. They are unable to render the confidence and co-operation which are essential to successful results. For such patients, I would advise N<sub>2</sub>O&O. Dr. Crile has demonstrated successfully a combination of the two methods. He first uses novocain to cut off the sensory impressions from the operating field and then performs the operation under N<sub>2</sub>O&O to obviate mental strain.

I often use novocain to block the nerve, and perform a greater part of the operation; and when I am ready to remove the tooth, I finish the operation under N<sub>2</sub>O&O with very pleasing results.

I believe the well-equipped operator should be competent to administer both local and general agents, as the case may require. Some cases demand local and some general anesthesia. There are times when it might be advisable to switch from one to the other.

For instance, some time ago I started to administer  $N_2O$  to a very strong, large man. Just as he reached the excitement stage, he grabbed me with both hands, and was going to throw me right out of the window, which was twelve stories up. He said he was going to kill me and he meant just what he said, too. He came near making good. Believe me, there were some doings around that office for a little while. He soon came out of it, and said: "What's the matter, did you pull it out?" I said "NO! You almost pulled me out." His wife was in the room and she was scared stiff, and I might add, so was I. Conductive anesthesia for him after that, and it works very nicely for him too. And no chance for trouble of that kind.

Since that time I take no chances on the men when I administer  $N_2O$ . I put a big wide strap around the arms below the elbows and across the hips and down around under the chair. It will at least keep them in the chair, so that they can't clean out the house.

Now this is only one case where conductive anesthesia would be preferable. And there are many others too numerous to mention. I believe that conductive anesthesia is one of the best and safest things that ever has come to the dental profession.

Dr. Crile says: "For the general practitioner novocain-suprarenin anesthesia presents the following advantages:

*"First*, it is not dangerous to the patient's life; *second*, nearly all operations incident to general practice can be performed under it; *third*, an assistant is not necessary; *fourth*, the patient needs no preparation; *fifth*, little time is consumed; *sixth*, the patient can co-operate; *seventh*, a simple and inexpensive outfit is required; *eighth*, it can be used on patients of all ages."

Personally, for the most difficult cases of impacted third molars, or in fact any other impaction, where the operation is surgical and much time is consumed, I prefer conductive anesthesia. It is best in my hands and for the technic which I use in a great many cases. I do think, however, that we have more after-pain by the nerve blocking method than we do with general anesthesia. But it is not of a very serious nature, or of long duration. There are other things to be considered, which are of greater importance than the little after-pain, which is soon over.

Dr. Henahan speaks of the conservation of the surrounding tissues. This is certainly of great importance and I think better results can be obtained by conductive anesthesia than any other way.

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### To Pass Strip Through a Tight Contact

When it is difficult to pass a finishing strip into the inter-proximal space on account of a tight contact point, sometimes it can be done by first passing a ligature to the tightest point. Then pass the strip down against it and carry both ligature and strip through.—

—J. F. Nelson, *Oral Health*.

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### Buckley's Desensitizing Paste

Has anyone ever tried this paste on those extremely sensitive gingival margins where a filling is not necessary, and  $AgNO_3$  is contraindicated (on account of the inevitable blackness which follows its application), and  $ZnCl$  is not effective? Smear the exposed surface with the paste and seal with calxine for two days. I have had excellent results without any pulp trouble or discoloration.

—E. G. Simpson, *Newcastle, Commonwealth Dental Review*.



ORAL PROPHYLAXIS IN RELATION TO  
MEDICINE AND SURGERY\*

BY WILLIAM W. PENSKE, D.D.S., TOLEDO, OHIO

DENTAL SURGEON TO LUTHERAN ORPHANS' HOME AND TO THALIAN TUBERCULOSIS DISPENSARY,  
AND ORAL SURGEON TO ROBINWOOD HOSPITAL

THE MEDICAL AND DENTAL PROFESSIONS are constantly looking about in research work, seeking whereby they may benefit, and better assist mankind. That is what prompted me to choose my subject: "Oral Prophylaxis In Relation to Medicine and Surgery."

It is not my intention to give you a long paper on cleaning or pyorrhea and its treatment; but to bring before you for your discussion and consideration the condition of the oral cavity which has been infected, and also while under medical and surgical treatment, as it often has been seen both in the home and in the several hospitals and institutions.

Allow me if you will, in order to bring this subject properly before you, briefly to review a little of the historical side of oral prophylaxis, the pathological conditions existing, and how to prevent these conditions. Uncleanliness of the mouth probably is the indirect source of more bodily disease than any other one cause.

## HISTORICAL

It is quite evident from research made through the history of many years, that it always has been considered of more or less importance that the teeth, as well as other parts of the body should be cleansed, in order that the individual might enjoy good health and the esteem of his fellows. The earliest Chinese works on medicine show that 1800 years before Christ some attention was given to the care of the teeth.

About 1500 B. C. some of the Hindu sacred works, as well as those on medicine, contained among other laws of health, rules for the cleansing of the mouth after eating.

The early Romans, too, had knowledge of the advantages to be derived from the cleansing of the teeth. J. Grasset St. Sauveur, writing of these people in *L'Antique Rome*, said: "In order to keep their teeth clean and white they used a great deal of a certain liquid of curious composition. They knew the use of *small brushes* and toothpicks of gold, of silver and of quill."

Jacob von Faulke, in *Greece and Rome, Their Life and Art*, referring to the matter of growing old, says: "She resisted to the last, concealed her wrinkles, helped her figure with judicious padding, and replaced lost teeth by artificial ones of ivory, fastened with gold."

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\*Read before the Toledo Dental Society, Staff to Robinwood Hospital, and the District Nurses' Association, Toledo.

As early as the second century dentistry and surgery was a recognized art; but during the Dark Ages, with many of the other arts and sciences, it languished, and had it not been for the monks, to whom the later generations are greatly indebted for preserving records, it might have been lost sight of entirely. In fact, it is believed they did more or less to relieve suffering due to diseased conditions of the teeth.

With the exception of references to cleansing the teeth, history shows that about the only form of dentistry practiced by the ancients was the restoration of lost teeth by artificial substitutes. In those times artificial teeth were very crude affairs, and the wearers were usually objects of ridicule. If the dentistry of today were not of such a high order, we probably would take more care to preserve our natural teeth.

The profession of dentistry has made very decided progress during the past fifty years, and now has reached a high state of perfection in the matter of repair of diseased teeth and the replacement of lost ones by artificial substitutes.

#### DENTISTRY OF THE FUTURE

A great deal of attention now is being given by scientific men to the study of prevention of disease in all its forms, and much success already has been achieved along this line.

In dentistry today the trend of thought especially is directed toward prevention of decay and other pathological conditions by a system of cleansing of the mouth and teeth and the regulation of the quality of the secretions. Oral prophylaxis is the name applied to this particular branch of dentistry, which is receiving more and more attention each year. It is believed that in time the chief energy of the thorough and up-to-date dentist will be expended along this line, in order that destruction of the teeth may be prevented. He will take particular care, too, to instruct his patients in the best methods of caring for and cleansing their mouths and teeth. The dentistry of the future will be a preventive rather than a curative treatment.

As we become more enlightened upon the subject of cleanliness, we will begin to reap more fully the benefits of its practice; in fact, we are now able to control to a great extent the spread of disease, by vaccination against some forms, purification of drinking water, food, etc., prevention of the accumulation of filth, and cleanliness of our persons and surroundings generally.

A great many forms of disease are caused by germs which enter the body chiefly through the mouth, which latter has been aptly termed, "the vestibule to the whole system." The members of the profession of dentistry realize this fact, and are putting forth their best efforts to take advantage of the opportunity, which is theirs, as guardians of the mouths and teeth of the public, not only to prevent destruction of the teeth by caries, but also to control, in a large degree, many other forms



of disease. It is confidently anticipated that by the intelligent practice of oral hygiene more will be accomplished to prevent decay of the teeth during the next twenty years than in all the ages that have gone before.

Adenoids, and hypertrophy of the tonsil, a condition from which many children suffer, often has a very marked affect upon the teeth, and consequently upon the face. This enlargement of the tonsil closes the posterior openings of the nose, and the child is compelled to breathe through its mouth. If this abnormal respiration continue over a long period, the upper front teeth often are protruded and the lower lip rolls in behind them. This disfigures the face very decidedly. The adenoids should be removed by the surgeon, and the teeth drawn back to their normal position by the orthodontist or dentist, so that the child can close its lips and breathe normally.

#### WHAT IS DECAY OF THE TEETH, AND WHAT IS THE CAUSE?

Dental caries is a disintegration or breaking down of tooth tissue, resulting from the action of certain species of micro-organisms. Tooth decay is persistent; it goes on very rapidly in some mouths, and more slowly in others, according to the condition of the secretions, the general health and the care taken in cleansing the mouth and teeth. Neglect of proper cleanliness of the mouth is one of the chief causes of tooth destruction, as well as other diseases.

Each germ disease, whether it be decay of the teeth, tuberculosis, or any other, is the result of the action of specific forms of bacteria. The warmth, moisture and presence of food in the mouth make it a desirable habitat for germs. In the average mouth each drop of saliva may contain between four and five thousand germs, and in a neglected one as many as one billion one hundred and forty million micro-organisms have been found. In almost any mouth there may be present the germs of many diseases, such as diphtheria, typhoid fever, cholera, pneumonia, tuberculosis, etc.; and yet if reasonable care be taken in the cleansing of the mouth, and the general tone of the system is kept up, the individual never may contract any of these.

The particular germs which cause decay of the teeth do so in this manner: They seem to attach themselves to the smooth surfaces of the teeth by means of little gelatinoid plaques, and if surrounded by a suitable soil in which to grow, such as a collection of food, and are not disturbed, their action upon the food causes the production of an acid. It is this acid which destroys the teeth.

The colonies of germs cover themselves in with the plaques which they form, and the acid which is produced by their action upon the food is held in contact with the teeth by these plaques, and is not diluted or washed away by the saliva. The acid first softens the surface of the enamel and thereby makes it rough, which facilitates the lodgment of more germs and the food in which they grow. The destruction goes on until enamel is penetrated and the dentin reached. This latter part

of the tooth is less dense than the enamel, and is destroyed by the acid much more rapidly; a tooth which may have only an opening through the enamel large enough to admit the point of a pin, may have a very large cavity of decay in the dentin. The germs crowd into a cavity of this kind, and the food being constantly supplied to them, they grow luxuriantly.

Sweet and starchy materials form the best soil for the growth of bacteria. Their first action upon the food is to transform the starchy portions, such as bread and potatoes, into sugar; next the sugar is changed into an acid. It thus may be understood readily why sweet things generally are so destructive to the teeth, as the acid which causes the decay is formed very quickly directly from the sugar. Biscuits, bread and butter, candies, etc., eaten by children at bedtime, without cleansing the teeth afterwards, are responsible for the destruction of millions of teeth.

#### WHAT CAN BE DONE TO PREVENT DECAY?

The first requisite is that the mouth and teeth be kept perfectly clean—the latter shining. *Cleanliness is the best known preventive of dental caries.* The teeth are not always perfectly formed when they erupt, and the development of the crowns, or exposed portions, stops before they appear through the gum. The imperfections in the enamel, when they are present, usually are so small that they would not be noticed, except upon careful examination by a dentist. All defects should be repaired with fillings, and if there is any irregularity of the teeth, this, too, should be corrected if at all possible.

If parents will take their children to competent dentists as soon as the temporary teeth have erupted, and see that every tooth is in perfect condition, then the little ones will have a fair start, and cleanliness will be the main factor thereafter in the preservation of the teeth. Of course it is desirable to have the teeth examined from time to time, in order that any new cavities forming may be repaired early, and to see also that the permanent teeth as they come along are erupting in their normal positions and are free from imperfections.

It is unwise to allow the first, or temporary teeth, to go to destruction without any effort at repair. The too-early loss of these teeth is responsible for many irregularities. In order to get the very best results, the temporary teeth should be kept in perfect condition until their successors push them out.

The most important teeth of the whole set are the first permanent molars, and these often are decayed beyond repair in the mouths of some children before a dentist is consulted. These molars erupt about the sixth year, immediately behind the temporary teeth, both upper and lower, being the sixth tooth from the median or middle line of the mouth. Mothers very often mistake these for temporary teeth, and



do not value them on that account; but if they realize how important it is to preserve the temporary teeth, as well as the permanent ones, there would be a great improvement in the masticatory apparatus of the rising generation, both in utility and appearance.

Teeth which are irregular are much more liable to decay than those that are normally placed, because the irregularity facilitates the lodgment of food, and it is difficult to cleanse them with the brush. Other very serious diseases of the teeth and surrounding tissues, such as pyorrhea, often are due to irregularities.

The teeth in some mouths seem to be more "soft" than in others, and decay more rapidly, so much so that many people think their teeth are so "soft" that it is useless to try to save them from destruction. It is not the "hardness," or "softness" of teeth which governs their decay, but their environment. The saliva varies greatly in different mouths, and it is this variation, more than anything else, which has to do with the apparent resistance of some teeth to decay, rather than any quality of the teeth themselves.

In mouths where the saliva is very tenacious and stringy, decay usually goes on very rapidly, because the teeth become coated over with a viscid film, making a suitable abode for the germs which cause decay. Good vigorous use of the tooth brush several times a day, accompanied by thorough mastication of the food, will in time change this condition of the saliva to that of a clear healthy consistency. This "ropy" saliva is very often the accompaniment of a nervous disposition, and the teeth usually are very sensitive. When the saliva is gotten into a healthy state, the extreme sensitiveness of the teeth will disappear. When a person is in a delicate state of health, too, the saliva is not normal, and decay of the teeth goes on more rapidly.

There are very many conditions which change the character of the secretions. To prevent the teeth from decaying, one must keep up the tone of the general health in addition to the proper use of the tooth brush; the poorer the health, the more carefully should the mouth and teeth be cleaned. The teeth, and also the soft tissues surrounding them, require plenty of exercise, in order to develop them to their most perfect condition, just as do all other parts of the body.

#### THE BUCCAL SECRETIONS AS CARRIERS OF TOXIC SUBSTANCES AND OF PARASITIC EXCITANTS OF DISEASES

It is a well known fact that the inflammatory processes in the tooth pulp, pericementum and gums brought about by a diseased condition of the human teeth, lead not only to obstinate neuralgias, but also to severe diseases of the eye and ear, to eruptions of the skin, spasm of the muscles, etc.

Cases of spasms of the facial muscles, lockjaw, convulsions, spasm and paralysis of the ciliary and other muscles of the eye, strabismus,

glaucoma, cataract, conjunctivitis, etc., otitis, thrombosis of the sinuses of the brain, eczema of the face, indigestion consequent on imperfect mastication, nervousness, epileptic attacks, paralysis, etc., proceeding from decayed teeth, come to our notice, many of them repeatedly, in dental and medical literature. These are secondary affections caused by reflex action, in which the mouth-bacteria participate only in so far as they are to be regarded as the excitants of the primary diseases of the mouth. As is well known similar phenomena very frequently occur during dentition, in obstructed eruptions of wisdom teeth, in exostosis of the cement, formation of pulp stones, etc.

The intimate connection of the quintus through the ganglia ciliare, sphenopalatinum, oticum submaxillare with other cranial nerves and with the sympathicus, easily accounts for them.

We have, however, at present to occupy ourselves with the infectious diseases of the oral cavity itself, and with those that are called forth by a migration of pathogenic micro-organisms from the mouth to more remote parts of the body.

#### TOXIC PROPERTIES OF MIXED HUMAN SALIVA

The belief that the human saliva may under certain circumstances have a poisonous effect upon the animal body is by no means of recent origin. Habbarrhamus, Aegyptus, Aetius (*De re med.* 2, 107) Aelianus, and many others were aware that the saliva of a person with an empty stomach is fatal to scorpions, and the celebrated Galen himself saw a scorpion killed by saliva without the use of magic. Aristotle observed a girl whose bite was as poisonous as the most fatal snakebite; an arrow dipped in the saliva invariably killed anyone wounded by it (Stricker). Various other celebrated authorities of olden times who bear evidence to the poisonous character of the human saliva will be found in the work of Stricker, from whom the above notes are taken. In modern and in very recent times the saliva has been the subject of repeated experiment on the part of both physiologists and pathologists.

Eberle maintained that the saliva of persons excited or enraged or suffering pain acquired poisonous properties, which he accounted for by an increased formation of sulpho-cyanid of potassium. Eberle was actually able, as he thought, to detect an increase in the amount of this salt in his own saliva during rage or anger.

Senator made subcutaneous injections of purulent sputum in dogs, and saw the animal soon sicken; they manifested high temperatures, chills, diarrhoea, etc., and perished without exception.

Wright observed that the injection of his own saliva into the stomach of dogs was invariably followed by sickness and vomiting. Since, however, Wright and others who followed him smoked tobacco in order to excite the flow of saliva, the toxic action is in this case to be attributed



to the tobacco alone. When the experiments were repeated without the use of tobacco, no vomiting occurred.

Moriggia and Marchiafava (1878) demonstrated that an injection with the saliva of children who had died of lissa proved fatal to rabbits.

The first authors who referred to the poisoning caused by the injection of mixed saliva in the presence of micro-organisms, were Raynaud and Lannelongue. They vaccinated rabbits with the saliva of a child afflicted with hydrophobia, and saw the rabbits die within forty-eight hours. Injections with the blood as well as with the buccal mucus of the dead child had negative results.

At the same time, Pasteur reported on experiments which he had made together with Chamberland and Roux, with the saliva of the same child. Two rabbits inoculated with it died after thirty-six hours. The micro-organisms from the blood, cultivated in bouillon, appeared as rods 1 m. in diameter, contracted in the center, resembling the figure 8. They were surrounded by a gelatinous capsule. At first Pasteur thought he had discovered the cause of hydrophobia in this microbe, although Colin at once expressed the opinion that the disease called forth in rabbits by the experiments of Raynaud was not hydrophobia, but rather showed much more similarity to septicæmia. The rapid progress of the disease particularly spoke against the former supposition. Colin was accordingly the first to obtain an insight into the true nature of the affection following the injection of human saliva.

Vulpian soon after reported that he had produced the same disease by vaccinating animals with the saliva of healthy persons. By subcutaneous injections of minute quantities of blood the disease could be transmitted from one animal to another. In the blood of these animals Bochefontaine and Arthaud found microbes which morphologically coincided with Pasteur's.

Sternberg and Claxton, quite independently of the foregoing, corroborated Vulpian's statements, while Griffin showed that pure parotid saliva is altogether harmless. In his opinion, the local and general phenomena which appeared after an injection with mixed saliva were caused by soluble or insoluble substances formed in it by putrefaction.

G. Gaglio and di Mattei concluded that human saliva as such exerts no toxic influence, but gains its poisonous property by admixtures from the oral cavity. Boiled saliva exerts no action, or but a comparatively insignificant one.

A. Frankel further substantiated Vulpian's observations, and especially emphasized the remarkable fact that the microbes in question may be present in the saliva of one and the same individual at certain times and at others not.

Frankel, as well as other observers, found rabbits best adapted for these experiments; mice and guinea pigs also proved susceptible, whereas chickens, pigeons and dogs were refractory. The same results were

obtained by inoculating mice and rabbits with the saliva of a woman afflicted with mycosis tonsillaris benigna. The saliva mixed with bouillon was allowed to stand for a number of hours at blood temperature, and then injected into the lungs of two rabbits and two mice. The death of all the animals resulted within thirty hours; in the blood were found numerous cocci and diplococci, most of them enveloped in a gelatinous capsule.

Klein and others also call attention to the infectious properties of human saliva, particularly under diseased conditions. It was established by these numerous investigations, beyond doubt, that a group of micro-organisms belonging to the coccus form occurs almost invariably in the buccal juices, which, when brought into the circulatory system in sufficient numbers, may provoke the most dangerous diseases. Of late years, by the cultivation of mouth-bacteria in artificial media and in the animal body, the pronounced pathogenic properties of a large number of them have been conclusively demonstrated. The most important of these will be discussed below.

#### PATHOGENIC BACTERIA OF THE HUMAN MOUTH

Not for the less dangerous ferment bacteria alone, but for micro-organisms of a pathogenic nature as well, the oral cavity presents in point of temperature, moisture, nutritive materials, etc., an almost perfect breeding place.

For this reason it is to be expected that among the many pathogenic micro-organisms entering the mouth from time to time some may obtain at least a temporary foothold, or may propagate themselves for a certain length of time, as long as the conditions remain favorable, or finally may establish themselves permanently.

The observations of many bacteriologists have led to the unanimous conclusion that there are large numbers of well-characterized mouth-microbes which will not grow on any of the artificial nutrient media now in use. The thought, therefore suggests itself that there may be other bacteria in the mouth, which, possessing no striking morphological features and not growing on artificial media, have thus far escaped detection, and which, nevertheless, may possess pathogenic properties which they may unfold under propitious circumstances.

#### ENTRANCE PORTALS OF THE PATHOGENIC MOUTH BACTERIA

The diseases caused by the pathogenic bacteria of the mouth may be considered under six heads, according to the point of entrance of the infection:

*First*, infections caused by a breach in the continuity of the mucous membrane, brought about by mechanical injuries, (wounds, extractions, etc.) These lead either to local or to general disturbances.

*Second*, infections through the medium of gangrenous tooth pulps. These usually lead to the formation of abscesses at the point of infection



(abscesses apicalis), but also sometimes to secondary septicæmia and pyæmia with fatal termination.

*Third*, disturbances conditioned by the resorption of poisonous waste products formed by bacteria.

*Fourth*, pulmonary diseases caused by the inspiration of particles of slime, small pieces of tartar, etc., containing bacteria.

*Fifth*, excessive fermentative processes, and other complaints of the digestive tract, caused by the continual swallowing of microbes and other poisonous products.

*Sixth*, infection of the intact soft tissue of the oral and pharyngeal cavities, whose power of resistance has been impaired by debilitating diseases, mechanical irritations, etc.

In this connection the possibility of an infection by the accumulation of the excitants of diphtheria, typhus, syphilis, etc., in the mouth must also be taken into consideration.

#### GANGRENOUS TOOTH PULPS AS CENTERS OF INFECTION

Infections through gangrenous tooth pulps are to be ranked among the most frequent pyogenic infections of the human body; they by no means always have the harmless character commonly ascribed to them. The fact that the point of infection is so deep-seated, and is inclosed by hard, bony tissue, of itself anticipates results of a serious nature. According to Israel, the root canal furnishes a point of entrance even for the ray fungus, *Actinomyces*, and in one case the microscopic examination revealed the elements of this organism in the canal of a pulpless tooth.

In regard to the faculty which the pulp possesses in taking up germs of infection and transmitting them to the tissues surrounding the apex of the root or even to the entire organism, distinguish the following possibilities:

*First*, the infection of the pulp begins either on the surface or in the superficial layers; a progressive suppurative destruction of the tissue takes place, gradually spreading towards the apex of the root.

*Second*, an infection of the entire pulp occurs, causing a total purulent inflammation; or, a local septic infection becomes general; for example, a case of pulpitis acute partialis purulenta develops into a case of pulpitis acuta totalis ulcerosa (Rothmann).

In both first and second, micro-organisms of a more or less pronounced pathogenic character make their way to the apex of the root, or may even encroach upon the periapical tissue.

*Third*, necrosis of the pulp occurs without any preceding infection (in cases of total acute inflammation, destruction of the pulp by arsenious acid, etc.) After the death of the pulp has occurred, whether in the manner described in numbers first, second or third, an invasion of various bacteria, strictly saprogenic as well as pathogenic, usually takes

place; the pulp, or its remains, becomes a sticky, cheesy, or semi-fluid mass (gangrene).

*Fourth*, we should take into consideration the possibility that micro-organisms may be taken into the circulatory system from a small focus of suppuration in the pulp, such as pulpitis acuta partialis purulenta, etc., thereby leading to diseases of a more serious nature. It is universally known that such a general infection may proceed from alveolar abscesses, as shown by the cases cited. But, as far as I know, no communications have been made as to the possibility of septicæmia or pyæmia, arising directly from the pulp without the intervening stage of an alveolar abscess, which acts as an accumulator of the poison.

If, on the other hand, living pathogenic bacteria are present in the pulp, an infection will take place where intensity depends upon the number and virulence of the same.

Where the typically pyogenic micro-organisms, staphylococcus pyogenes aureus, etc., are present, we may expect severe suppurative inflammation and formation of abscesses.

Parts of the pulp infected with the bacillus pulpæ pyogenes will also occasion suppurative inflammation.

Infections with various pathogenic micro-organisms (mixed infections) will provoke divers phenomena. The progress of the infection will in all cases materially depend upon the general predisposition of the patient to infections, and upon his momentary state of health. Consequently, apical infections exhibit all transitions from a hardly perceptible reaction to the most dangerous phlegmonous inflammations, accompanied by general symptoms, such as high fevers, chills, etc., which, as many instances show, may lead to meningitis, as well as to pyæmic and septicæmic processes, with fatal termination.

The connection between affections of the teeth and severe diseases of the jaw has already been pointed out by Hippocrates. He wrote, "The jaw of the son of Metrodorus mortified in consequence of toothache, and the gums became intensely swollen; the suppuration was moderate. Not only the molar teeth, but even the jaw bone itself was thrown off."

A great deal more could be mentioned with regard to conditions of the oral cavity in different complaints, some of which are found in pregnant women. I have examined the mouths of a great many patients that were pregnant, and I invariably found gingivitis present. Physicians should insist that patients of this kind should consult their family dentist, in order to avoid this condition. During a long illness or constitutional disturbance we find an excessively acid saliva. During pregnancy there usually is an excessive flow of saliva with nausea, vomiting, heartburn, and an acid regurgitation from the stomach constantly bathing the teeth with acid secretions. Also in gout and rheumatism and other morbid states characterized by excessive uric, lactic and other



acids in the blood, acid and nervous dyspepsia, causing excessive acidity in the stomach contents. The teeth and mouth should receive all needful care during any sickness.

There seems to be a great deal of discussion with regard to treatment of pregnant women. In my opinion it is a criminal act to allow a mother to suffer pain from ailments in the oral cavity. If any exist they should be corrected immediately, even to the extent of extraction of teeth if necessary, even though the patient be a hemaphiliac. I also have seen a great many cases of gingivitis in patients recovering from attacks of la grippe. These conditions may come under observation of the family physician and surgeon and should not be passed off in a haphazard manner. I have seen several cases where good strong healthy teeth have lost their vitality with no history of injury, either mechanical or chemical, and the only reason that I can give for this condition is the excessive acid condition of the oral cavity.

If then, these conditions come to our knowledge, and even if they do not, the physician and surgeon as well as the dental surgeon should be constantly on his guard to combat conditions of this kind which retard the recovery of any patient.

While it may not seem that conditions of the mouth belong to the practice of medicine or general surgery, it is, nevertheless, one of the most important factors in a great many diseases treated by practitioners daily; and we find more and more that the dental surgeon is called upon to correct faulty conditions existing which help to hasten to a speedy recovery cases which may drag along for a long time with no apparent change.

In the correction of cases of this kind or in any conditions of inflammation or infection our object should be threefold—*first*, to reduce the power of the attacking micro-organism at least to the point of harmlessness; *second*, to accomplish this object with the minimum of irritation or disturbance of local cells; *third*, to restore normal circulation of the blood.

1151 Ohio Building.

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### Illinois State

The Fifty-fifth Annual Meeting of the Illinois State Dental Society will be held in Peoria, Illinois, May 13, 14, 15 and 16, 1919. The officers of the society are as follows: L. B. Torrence, President, Chester, Illinois; G. D. Sitherwood, Vice-President, Bloomington, Illinois; J. P. Luthringer, Secretary, 507 Jefferson Building, Peoria, Illinois; T. L. Grisamore, Treasurer, Bhicago, Illinois; G. H. Henderson, Librarian, Chicago, Illinois.

Most sincerely yours,

J. F. LUTHRINGER, *Secretary*.

## PRESIDENT'S ADDRESS\*

BY R. M. SQUIRES, D.D.S., WAKE FOREST, N. C.

**A**NOTHER YEAR HAS PASSED. It has been a year like no other in the history of the world—full of struggle and suffering, of fiendish hate and compassionate mercy. Through all the months of it our profession has continued to prove itself worthy the marvelous heritage of a glorious past. At the close of such a year of achievement in the dental world and on the threshold of even greater things, I greet you gladly this evening as the North Carolina Dental Society for the forty-fourth time assembles to exchange experiences of the past and lay larger plans for future service. I trust that you will join me in thanks to the other officers and the committees for whatever success this meeting can claim as it takes its place in the state history of our profession. Words are but empty symbols; therefore would I seek by genuine service to this society to express my personal appreciation of the kindness its members have shown me.

It is impossible to estimate the value we receive from our dental meetings, both as dentists and as men. To touch elbows in a common cause necessarily means growth of personality as well as profession. Hence I plead for your earnest consideration in the organization of city, county and district societies; not alone for mutual help in solving dental problems, but also for the fellowship we so much need in our profession. If we could have more social contact with each other, many of our petty jealousies would disappear.

"But never clasping hand in hand,  
Both often fail to understand  
That each intends to do what's right  
And treat each other honor bright.

"Then let no doubting thought abide,  
But firm good faith on either side,  
Confidence to each other give,  
Living ourselves, let others live."

We should give more time to our operations—be thorough; our services will then be worth more, the people given better care, and instead of taking his, we shall have patients to send to the other fellow. Let us rival each other in the quality rather than in the number of operations. Remuneration will be as much, or more, and humanity will be better served.

It is through the efforts of local and state societies in co-operation with the National that we today have equal status with the medical

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\*Read before the North Carolina State Dental Society, 1918.



profession in the army, and hope soon to have in the navy. We must continue and increase our loyalty to all of these organizations. The National deserves the sincere gratitude of the profession for what it has done along the lines of publication, research and legislation. And what it has already accomplished is but the beginning of what it is destined to do in future years.

Here at Wrightsville, in the old Atlantic's most delightful breezes, we met three years ago. We come back with the membership of our society increased 50 per cent.—a clear gain of one hundred in this brief time. There has been no stirring campaign to “compel them to come in.” To what cause then may we honestly attribute this most gratifying result? I beg leave to suggest that our lengthened roll is due largely to the action of a reorganizing committee that, just three years ago, instituted a Progressive Clinic and Lecture Course. By furnishing our clinicians some tangible remuneration and the opportunity to present their subjects in an orderly way to interested groups of their profession, we have stimulated them to give us their best, America's best. And it is hardly necessary to say again that America's best in dentistry is the world's best. It is true worth that counts and attracts. The preacher or the Sunday school teacher who must needs be everlastingly trying some new scheme to induce people to hear him, should seek another job. Say something worth while and you will have a grateful audience. “Deliver the goods” and there will always be someone to receive them. Serve good programs and the numbers, sooner or later, will crowd to enjoy them. Our unsurpassed State Dental Law, national legislation—which has been accomplished by local, state and national organizations—and the wonderful research work of our country, proclaim themselves our strong allies in drawing fellow-practitioners into co-operative activity. With their aid we should go from strength to strength, making our annual meetings so potent in influence, so magnetic in worth, that we shall attract to active participation every true son of the profession from the mountains to the sea. Let us take as our slogan, *the best*, applying it not only in our everyday practice but also in this society, making our programs so strong in information and inspiration, in teaching and training, that the appeal shall be irresistible.

For years we were content to feed our annual papers and discussions from our meager experiences supplemented by material from the dental journals. Then we advanced a step, calling in expert clinicians to tell us how to do new things and do the old in better ways; showing to the limited few who could crowd around, best methods of best work. Has not the time come for us again to forward march? We in North Carolina must not lose step with those in the front ranks.

Every modern educator knows that effective teaching is neither telling nor showing, but telling, showing and *doing* combined. We

have had Amalgam Technic given in this society; yet how many of us still mix amalgam in the hand, put it in the cavity with the fingers, and push it down with a round ball burnisher? Never using a matrix band, never carving our fillings, never polishing them at a later sitting. Dr. Johnson, an expert in Amalgam Technic, will show us a better way. Do not argue that we cannot get pay for this grade of work. We must begin by doing things for which we are not fully paid if we ever wish to be given value for what we do. We have had the Closed-bite Impression and Anatomical Articulation. How many of us really give our patients the benefit of this instruction, even though there are numbers of them who want this kind of service and gladly pay the price when we show them the difference? Are we doing root-canal work that will stand the scrutinizing search-light of the X-ray? We have had Conductive Anesthesia; yet how many of us except those who have taken the course under Dr. Hancock or some other specialist, really practice it? The same is true of Pyorrhea Treatment, Cavity Preparation, Prophylaxis, etc. Dr. Simpson, great teacher of dentistry and master in crown and bridge work, lectures to us tomorrow. He cannot help us much in the limited time he has except to inspire us and give us a few practical points. But if you and I could, for a week, do the actual work under his direction, we should go home with our ideas of crown and bridge work revolutionized, with a sufficient mastery of the subject to give our patients an entirely different class of work from that which they have been receiving at our hands. We are not doing the things which we have seen and heard. We forget what we have been told and shown because we do not practice them. We do not practice them because we lack confidence in ourselves, knowing that we do not possess the technic acquired by actually doing the work under the direction of a master-teacher.

For all these reasons, gentlemen, I most earnestly recommend: That we advance the further step which Oklahoma has already taken and other states are considering; that we establish a thorough Post-Graduate Course of one week on two or three subjects; and that the executive committee work out the details for such a course. In this way our clinician will not only tell us and show us, but he will see that we ourselves do the actual work until we are proficient in the line he teaches. Thus knowing and *doing* we shall master the details of each step so completely that we shall no longer hesitate to practice what we have learned. With confidence in ourselves, we can go back to our offices, not alone to testify that we have seen, but to do that we have done. In this way we shall give to our patients that which they deserve and that for which they are willing to pay, when once they understand that we are giving them only the best.

In teaching and in preserving the dental organs we are responsible to our fellow-men for a great service, as Dr. Stevenson will show us. At present our fifty thousand dentists to one hundred million people—



a ratio of one to two thousand—is wholly inadequate. Scientific research has proved what a large factor the dentist is in the health of the world. Others besides Charles Mayo are being convinced that “People will not die of plagues as in time past, but will die of simple infections originating above the collar.” Our state boards of health with their literature and work in the public schools, the oral hygiene propaganda, medical co-operation, recent work of the Dental Surgeon’s Corps of Army and Navy, and the activities of the Preparedness League of American Dentists—all of these agencies are leading the majority of our population to an ever increasing demand for dental services. Our state and municipal governments, as well as charitable institutions, are realizing that dentistry is not merely a luxury for the rich, but a necessity for everyone within their jurisdiction. This is the day for economy. What will the tax-payer say when he fully comprehends that one-third of the retarded pupils in our schools are due to bad oral conditions, and that it requires decidedly more of his money to keep a retarded child in school an extra term than it would take to keep its mouth in good condition? He will swell the cries for help from our profession which are already more than we can answer. The reconstruction period after this war must find us ready to meet its needs. It behooves us to plan along newer and larger lines, and plan *now*. When we consider the untold troubles arising from abscessed teeth and pyorrhea pockets, and the difficulty of curing these maladies, we are convinced that our work in future must necessarily be in the field of prevention. To summarize: many conditions are gradually increasing the demand for dental practitioners beyond the already inadequate supply—a supply decreased at present for military reasons. In view of this established fact, I beg to commend to your careful thought the new branch of our profession, the Dental Hygienist Course. While helping us to discharge our responsibility to humanity, this Hygienist Course will incidentally furnish employment to some of the women who because of this war must earn their own livelihood. Dr. Fones, of Bridgeport, Conn., has foreseen this new day, and in his city, meeting it with master plans, training women assistants who shall go out as lay-apostles to further the work.

Do we really mean that school children should be taught prophylaxis, or are we merely talking? Can dentists afford to do this work while patients are actually suffering for attention? Does not the solution of this great problem of teaching lie in the training and licensing of dental nurses? These women, working under the supervision of registered dentists, can make examinations and records of teeth, give class-room talks, tooth-brush drills, stereopticon lectures, prophylactic treatments, and instruct in the home care of the mouth. Perhaps the day is not far distant when the dental hygienist, like the school teacher, shall be employed by the government. Indeed do you not begin to foresee the time when the nation, plainly realizing the care it owes its people, shall

take full charge of all health propaganda, select dentists and physicians by civil service examination, and commission them to keep its millions of subjects physically fit for life and duty. These dental nurses would also help us to solve the problem of discharging our professional obligation to our eleemosynary institutions—to the deaf-mute, the blind, the prisoner, the poor. Dr. Fones also suggests that they be sent to give our soldiers and sailors the instruction in dental hygiene which they so much need.

Nor does institutional work limit the field of usefulness for these women assistants of our profession. Have you ever toiled faithfully on a piece of work, making it as nearly perfect as your skill and conscience could, but to have it come back in all too short a while in such condition that you were ashamed to own it? And all because no care was given to the mouth after the work was done. To those of us who take pride in a job well accomplished, this is one of the most discouraging phases of the profession. Speed the day when every reputable dentist in this state and nation shall have in his office a dental hygienist to keep clean and healthy every mouth which he has endeavored to put in good condition; and—till such instruction is given in our schools—to have a class of the children and adults within his practice, both teaching and helping them to keep mouths clean and healthy, thus preventing the great ravages of decay, loss of teeth, pulpless and abscessed teeth, pyorrhea, and the absorption of pus from these focal points. When we have shown the public what can be accomplished in this way, it will not be necessary to plead for appropriations to establish these clinics in our public institutions.

Therefore, members of this society, I beg to submit the twofold recommendation: That we give our hearty support and co-operation to those institutions preparing young ladies for this work; and, that we appoint a committee to secure the enactment during the next legislature of laws to regulate the practice of dental hygienists in this state, providing for a dental commission—either within or apart from our examining board—which shall examine applicants for this work. My heart is in these suggestions, and I hope soon to see this branch of our profession firmly established in our midst.

In this world struggle between autocracy and democracy, I am proud to be an American. When I reflect on the work of the Preparedness League of American Dentists, which, begun less than two years ago, has grown to a membership of more than thirteen thousand out of a profession numbering only about forty-six thousand in the United States, I am proud to be a dentist. I am glad that Dr. Hunt, director for this state, will later tell us about the scope and plans of this work both in our own state and throughout the nation. In the words of Major Heckard: "The plan of drive for making dentally fit our new National Army has been a case of I-will-go-where-there-is-no-path-and-I-will-



leave-a-trail! A way was made. It was a zigzag road at times, beset with many surprises; but it is now a road from which the rocks and ruts are fast disappearing." This is the highway of freedom, justice, mercy, service. Let us induce others to walk it with us, continuing to serve those who are called in the cause of humanity "'Till it's over, over there." As dentists let us do not merely our bit, but our utmost, co-operating with the League in all of its plans and purposes.

The hour has struck when we must everyone acquit ourselves like dentists and like men, for when the bloody Hun crossed the Belgian border "the bells of destiny rang 'round the world." Let me quote from a great address recently delivered by a college president: "The issues of this struggle are more fundamental and universal than any over which the iron dice of war ever before rattled. If they are decided adversely, the spiritual heritage of the race is forfeit and civilization disappears once again down the maw of barbarism. I cannot fancy a book of doom big enough to record the guilt of the men who precipitated this atrocious war. But America's participation for the defence of her national ideals and the ordered life of the world, is as righteous as it is splendid. With President Wilson we are all glad to fight for mankind. The final issue cannot be doubtful. Meantime it throws a blood-red gauntlet at our feet, challenging our nation, our religion, our culture and ourselves. \* \* \* And whether you dice with death while mad guns curse overhead, or in more homely ways give yourselves to the highest you see and the best you know, live or die, not for flag or clan or class,

" 'But for a dream born in an Artisan's shed  
And for the secret Scripture of the poor.' "

In this fateful hour, may we as members of a great profession and citizens of a favored land be worthy the sublime sentiments expressed by President Wilson when he recently said:

"I always have been proud to be an American, and was never more proud than now, when all that we have said and all that we have foreseen about our people is coming true. The great days have come \* \* \* when they see at last the high uses for which their wealth has been piled up and their mighty power accumulated, and counting neither blood nor treasure, now that their final day of opportunity has come, rejoice to spend and be spent through a long night of suffering and terror, in order that they and men everywhere may see the dawn of a day of righteousness and justice and peace."

## COMPLIMENTARY DINNER TENDERED

DR. HOMER C. BROWN\*

WEDNESDAY, DECEMBER 4, 1918

**D**R. Z. N. WRIGHT, president of the Ohio State Society, introduced Dr. L. L. Barber, of Toledo, as toastmaster, in a brief address as follows:

"One of the greatest pleasures in life is in honoring those who have, by their deeds, honored us of their profession, collectively. We have met around this festal board this evening to do proper honor to one who, by his untiring efforts in the matter of securing desired legislation for the dental profession, has won our sincere esteem and our deep gratitude. I shall leave to the toastmaster of the occasion, Dr. L. L. Barber, of Toledo, Ohio, the special function of introducing to you the various speakers who have kindly consented to assist in the honoring of Dr. Homer C. Brown, guest of the evening."

DR. BARBER: Mr. president, ladies and gentlemen, guests, one and all: I am reminded of an incident that happened to me, about a year ago. At a gathering where I was expected to be the speaker of the evening, after the feeding had been going on an hour or so, the toastmaster said to me, "Shall I let them enjoy themselves awhile longer, or shall we have your speech at once?" Then he said to the eaters: "Inasmuch as there must be an end to all good things, I am going to ask you to listen while Dr. Barber talks."

A few years ago the National Dental Association hung out a sign which read: "Good boy wanted." After awhile a young, husky fellow came in bearing the sign on his shoulder. The chairman of the society said: "Did you take that sign down?" and the boy answered, "Yes, I am the boy you want." That boy grew to manhood. I am purposely cutting the time short, for the purpose of introducing him to you this evening, as he has to catch a train, and we want to hear from him. It affords me pleasure to introduce to you Dr. Otto U. King, secretary of the National Dental Association.

DR. OTTO U. KING: Honored guest ladies and gentlemen: I assure you it is one of the great pleasures of my life to be able to come back to Ohio, even if only for a short time, to greet you, because I have learned that the Ohio State Dental Society stands for the highest things in dentistry. Somehow it seems to be Ohio's exceptional privilege to produce some of the greatest scientists, as well as some of the foremost politicians of all the United States. Two years ago I saw one of the most elaborate testimonials in the form of a medal I ever have seen, which medal was awarded by an eastern research institute to another of your Ohio men, the late Dr. J. R. Callahan, of Cincinnati. It

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\*This banquet was given by the Ohio State Dental Society in honor of Dr. H. C. Brown, Columbus, Ohio, in appreciation for the service he rendered in securing the recognition of Dentistry in the U. S. Army and Navy.





DR. HOMER C. BROWN

seems to me you can honor men who have won laurels in the profession in no better way than you are honoring our friend Dr. Brown, here tonight.

Now, I have done an unusual thing for me; I am confining myself strictly to notes in what I have to say. The occasion seems to require of me something better than an off-hand talk, so I am going to read.

#### REVIEW OF THE OFFICIAL RECORD OF DR. HOMER C. BROWN AS A SERVANT OF THE DENTAL PROFESSION

Mr. Toastmaster, honored guest, ladies and gentlemen: In the hearing before the Committee on Military Affairs of the House of Representatives, Sixty-fourth Congress, on a Bill to Increase the Efficiency of the Military Establishment of the United States, Dr. Homer C. Brown, the honored guest of the evening, said in part: (From Congressional Record, Feb. 3rd, 1916.)

"In order to qualify as an accredited spokesman for the dental profession and to better indicate my familiarity with its affairs, will say it has been my privilege to serve for five years as Secretary of the National Dental Association and later I was unanimously elected the first President of the reorganized National Dental Association.

"As Chairman of its Legislative Committee, I appear before you in behalf of legislation which has for its purpose the increasing of the efficiency and raising of the status of the Army Dental Corps."

Thus I introduce to you the subject of my toast.

It was during the splendid meeting of the National Dental Association, held in Cleveland, in 1911, that I first had the opportunity of beginning my official society relationship with our guest of the evening. I represented the State of Indiana in that conference of state societies that was called together the day prior to the meeting, to discuss the momentous proposition of reorganizing the National Dental Association on an entirely new basis. I had learned to know through correspondence with Dr. Brown that he was one of the leaders in this proposition that in 1913 culminated in the new birth of a greater National Society.

However, those of us who were in close touch with this problem of reorganization are the only ones, probably, that have a proper conception of the tremendous amount of patience, courage and time he devoted to it in order to so educate the profession as to be able to get them to see the necessity for the perfecting of these reorganization plans. In fact, back in 1911, dentistry was just beginning to get its eyes open to its greater opportunity of service to humanity through a larger and more representative profession. Dentistry had been harassed on one hand by the indifference and ignorance of the profession regarding what we were able to do for them, and on the other hand by a lack of appreciation from a larger part of the profession itself, regarding our duty to the public. These conditions, coupled with the unharmonious relationship existing among the members of our profession, relative to our legislative program to secure a more efficient army and navy dental surgeon, placed the entire dental profession in a very badly "scrambled" condition.

Probably only a few other men in the dental profession could have as successfully "unscrambled this omelet" of chaotic condition and discord, and brought about such unified and harmonious plans for organization and legislation as Dr. Brown, who with the leaders of the profession, through the loyal co-operation of our membership, have secured a greater organization and more advanced legislation for the army and navy, which exceeded our fondest expectations in 1913.

In order that we may obtain a clearer and more concise idea of the conditions existing in 1911, it may be worth while for us to review some of the history that dentistry has made during the last few years. Dr. Brown, in his presidential address before the 1914 session of the National Dental Association, said: "So far as your president is advised, every state society that has taken final action relative to becoming a constituent, with one exception, has done so by bringing into the National its full membership." This statement means that in one year we had grown from an insignificant membership of seven hundred, to eleven thousand five hundred. The consummation of such tre-



mendous results can be secured only through the strenuous efforts of a powerful and well-organized society.

In 1901, Congress authorized a Dental Corps, consisting of thirty contract dental surgeons, but without military rank. In 1911, legislation was enacted placing the Dental Corps on the basis of one to one thousand of the enlisted strength of the army. At that time, the status was changed from contract dental surgeon to acting dental surgeon, and provision made for one commissioned grade, that of first lieutenant, after three years' service. Thus ten years elapsed before the first grade of actual rank was provided, and only then in a restricted form.

The National Defense Act, of June 3, 1916, authorized two additional grades for the army dental corps, captain and major, and provision also was made for a dental officers' reserve corps, which placed us upon the same basis as all other staff corps.

It may be interesting to state that our hardest fight in connection with the dental corps' provisions of the National Defense Act was to secure actual rank. On October 6, 1917, there was passed by Congress a bill giving the same rank to the dental corps of the army as that enjoyed by the medical corps.

This was the most significant piece of legislation ever passed affecting the status of dentistry. It placed the profession where it belonged—side by side with others in the great healing art. It did more. It served notice to the world that official Washington recognized the great service which dentistry is capable of giving to the army and navy. We thus became a part of the great body politic—a prophylactic, sanitary and economic asset. May I say, in passing, that since the passing of this law the practice of dentistry can no longer be considered an individual matter? It is a community matter.

We henceforth hold a relationship to the people which gives us not only an added status but an added responsibility. The action of Congress was at the same time a compliment and a challenge. It expressed confidence in an ability to aid the government in a very vital way, and it assumed inferentially that we would measure up to the estimate it had placed upon us. There never was a time when so much was at stake. No man has a right to call himself a dentist hereafter, who will not open-heartedly devote some of his time and energy to the service of his country. The government said that a dentist need not go into the trenches as a private. The government knew the cruel wastage incurred in Europe by placing professional men in the line of battle and having them killed when they would have been of infinitely greater service in some other capacity. Up to this time, we have met the challenge thrown out by Congress, for our profession has nobly responded to the call of the government in this world war crisis. Over six thousand dentists have been commissioned. Men like Lieutenant Weedon Edward Osborne, who was the first naval officer killed in France. He was struck by a shell while carrying an officer to a place of safety. For this, he received the distinguished service cross and in my opinion, will go down in history as one of the great heroes of this war. Thus, with this illustration and the heroic service that has been done by other men in our profession, we have demonstrated that we have the spirit within us of the true patriot of 1776.

We have met the challenge of the government in this great war crisis with a clean, efficient record of which we always may be proud, and in this reconstruction period through which we are now passing, we will continue to demonstrate that brighter and better days are coming to the profession and to humanity through the profession. Better health, better mentality, and greater efficiency is what we offer the world, and the world is preparing to accept it.

The legislation of 1917 also exempted dental students from active service and placed them in the medical enlisted reserve corps. Had it not been for this legislation the dental colleges as well as the profession itself would have faced a crisis which would have seriously interfered with dental education as well as the future of dental service to humanity.

The toastmaster of the evening, in his presidential address before the National Dental Association in New York City, in 1917, said:

"The crowning achievement of this administration, as well as what I believe to be the greatest advancement in the history of dentistry, was the legislation secured in the closing days of the last Congress, which places our representatives of the Army Dental Corps and the dental students in an equal status with the Army Medical Corps and the medical students."

I am sure every student of the history of dental legislation knows that Dr. Barber in summing up the work of his administration stated the facts.

The new legislation for the navy dental corps, which was secured in the Act of July 1, 1918, gave to the navy dental corps men nearly the same rank as secured for the army dental corps men in the Act of October 6, 1917. In fact, one very important advantage was obtained which was not accorded to any other corps in the service and that was the dating back to original appointment of the rank and precedence of the original members of the corps who had served in the acting grades. I have had an opportunity in the last few days to interview many navy dental officers and they all seemed to be very well satisfied with this advanced legislation.

Thus, we see that the first real constructive and harmoniously-outlined plan for advancement of the army dental corps was presented by Dr. Brown and unanimously adopted by the House of Delegates, at Rochester, N. Y., during his administration.

This brief review of dental legislative history I am sure will not only be edifying but should contain some facts that would compel all of us to note more carefully and thoughtfully what the dental profession has secured during Dr. Brown's official relationship with the National Dental Association as its president, secretary, and chairman of the legislative committee.

Dr. Brown, no one knows better than I of the hard work that you have put forth to secure these results: the long hours of anxious planning in perfecting and ironing-out proposed legislative amendments; the many trips to Washington to confer with your own and other committees—to appear at stated times before the House and Senate Military Affairs Committees—hours and days spent in interviewing representatives, senators and executive officers; the misunderstanding, jealousy, back-biting, suspicion, prejudice and rancor in high and low places to be allayed, and above all the great sacrifice you made in the loss of time from your home and practice. I know, too, something of the disappointment, heartache and sacrifice you have made that we might have a more efficient profession, a profession which should rank on an equal basis with that of the medical.

However; the history of mankind reveals the fact that no great cause ever has been won for the uplift of the human race without a great fight; and the result of these conflicts has left scars; but there is one thing certain about the man who has scars, and that is that he has gone through some sort of a conflict; he was doing something. Scars never come to people who sit still. Scars cost! Their price is paid in courage, sacrifice, unselfishness and suffering.

"But scars silently testify to the value of character as no number of material medals or written words possibly could."

The forerunner, the prophet and the leader bear scars that no human being can see. Such as these carry around some scars that any one could discern if they would. "Who is it that can measure the depth of the scars interwoven about the lines and planes of a man's face?"

A great lawyer, whose name is known by the masses of America, went to a photographer for some pictures. He sat in his office with a friend as the finished pictures were delivered to him. "Oh," he remarked on glancing at them, "See what they have done; they have taken all the lines and scars from my face that it has taken me thirty years to put there."

Dr. Brown, may I suggest that you continue your great fight for the good of the profession? Other scars may come before the nightfall, but each will mark a milestone in your career and in your advancement for the cause of dentistry and your character.

During the last few years, the dental profession has fought and won a good fight for the highest educational and professional standards and perfected a great organiza-



tion, which has rendered and will continue to render more efficient professional service to humanity. Dr. Brown, in the consummation of all these plans, you have been one of our great leaders, and at this banquet we have come to present to you our treasures of frankincense of appreciation, and myrrh of grateful hearts, for the tremendous sacrifice and efficient service you have rendered to the cause of dentistry. Tonight your great state society, through this testimonial banquet, has honored itself in honoring you, and on behalf of the National Dental Association, with its great membership of twenty-one thousand one hundred and twenty-nine, we wish for you

"That all your nights may be filled with music,  
And the cares that infest the day  
May fold their tents, like the Arabs,  
And as silently steal away!"

TOASTMASTER: Years ago I was a sort of self-constituted steering committee of one, to direct a lot of land-lubbers sailing by steamer out of Toledo, to attend a Tri-state meeting. A young man and his wife were of the party. It was a tempestuous night, and the boat rocked and tumbled so that the captain decided to make no landings until we got to Cleveland. Meanwhile I was passing through the cabin, hanging on at the sides, when I discovered this young man and his wife, writhing on the floor in all the agonies of seasickness. I picked up the lady, hoping by some means to alleviate her sufferings, and discovered that she was Mrs. Brown. I did not extend my gallantries to picking up Brown, although I have since come to feel that I should willingly help him were it not that he usually is quite able to help himself in emergencies. (Laughter.)

At this time we have two presidents at this board, the president and the president-elect, the former not as yet having stepped down and out. (Laughter.) I take pleasure in introducing to you the president-elect, Dr. W. H. Hayden.

DR. W. H. HAYDEN, Youngstown: Mr. Toastmaster, honored guest, ladies and gentlemen: I had no intimation until about five minutes ago that I was to be called on tonight. I am however proud to respond. It is a matter of great pride to me that I am permitted to have a share in thus honoring our guest of the evening, because we were classmates in college. He is one of the boys of our class who has certainly distinguished himself.

One of the members, learning that I was to be called upon tonight, asked me to tell this little story: In the old college days some of the boys had to get on with a very limited allowance. Brown was one of us in that class and was an awkward young fellow, stoop-shouldered, shy, but a hard worker. He "made good" in the class.

About two weeks before graduation, he appeared with two complete, high-grade, tailor-made outfits. It was just as if he had been to a fire. (Laughter.) We inquired as to the occasion of this "dolling-up" and he replied, "I am not very good-looking, you know, but I believe I have made good here in college, and I have been giving myself a treat. I am going out after something big, and what I lack in looks I have to make up in dress and I have just got to get used to these clothes." (Laughter.)

Now it seems to me the events of years elapsed since that time, the service rendered, the fame achieved, prove that Brown "knew how to wear his clothes." (Applause.)

I have here a telegram from Dr. H. T. Smith. "Congratulations on your election to the presidency O. S. D. S. Express my appreciation of Brown, of the honor he has

conferred on the profession through his successful efforts in the way of securing legislation concerning the dental Army and Navy Bill."

I think I have reached a good place to leave off. I thank you. (Applause.)

**TOASTMASTER:** It is not everyone who is a real spy. We have with us a gentleman who probably spied upon Brown. In the years of long ago, when two dentists met on the street, they usually spoke about and not to each other, referring to the past. Dr. Casto is going to talk to us about Dr. Brown.

**DR. F. M. CASTO, Cleveland:** Mr. Toastmaster, honored guest, ladies and gentlemen: The privilege and pleasure of being here tonight is twofold. One is being given the opportunity to associate with those people in whom he has the greatest interest, and between whom there are many things in common, and for the purpose of paying tribute to one of our own members who is justly entitled to such consideration.

The position that I am in in regard to what I have to say tonight reminds me of a story: A southern negro desired to enlist in the army. He reported to the local recruiting station and made his wants known. The recruiting officer asked him in which division he wished to enlist, the infantry, artillery, or cavalry. Rastus said, "It don' mak' no diffrunce; I jus' want to fight, thas all." The officer explained that in the infantry the men walked, in the artillery they rode on the cannon, and in the cavalry they rode horseback. Rastus thought a moment and then said, "I'll tak' the infantry, cause when the order for retreat comes, I don' want to bother with no hoss;" and so I decided that when my response was in order, I didn't want to bother with no memory, so I played safe and wrote down what I have to say. In fact I have prepared a short biography of our honored guest, which I thought would be appropriate, and of interest on this occasion.

He was born on a farm at Mercer's Bottom, W. Va., September 4th, 1868. Thus he became a semi-centenarian September last. It is said that to be born at Mercer's Bottom is a most distinguished honor, because in two hundred years or more of its existence very few persons have had that privilege! Our friend, therefore, received a rich endowment at the very beginning, and no doubt this has had much to do with his successful and enviable career. I am told that he was a precocious child. He cut his first tooth at the tender-age of two months, knew the alphabet at two years, and multiplication table at six, and when at the age of two his parents moved to Swan Creek, Ohio, he was the envy of the town. There again was bestowed upon him a distinguished honor, because Swan Creek, mind you, could boast of almost as few births as could Mercer's Bottom.

Obviously he spent most of his early life upon a farm, and received the specialized education characteristic of a country school. In due time he successfully passed a most rigid examination, and received as a reward a teacher's certificate. He never taught; that is, he never taught under the licensed privilege of the said certificate.

His duties while a boy on the farm were many and varied, yet he performed each and every one in a most successful, efficient, diligent, and trustworthy manner, especially such as milking the cows, slopping the pigs, feeding the chickens, cording the wood, herding the cattle, following the plow, sowing the grain, reaping the harvest, mowing the hay, running the chores, fighting the bumble bees, and last but not least the daily plunges in the "old swimming hole." He pursued this most interesting career for some considerable time, but finally for some unaccountable reason his thought was turned toward the study of dentistry. Why? No one seems able to explain—because the status of dentistry in isolated districts at that time was nothing of which to be proud.

July, 1888, he entered the office of Dr. Miles, at Gallipolis, Ohio, for study, and thus began his dental career. He very soon owned the establishment; that is he bought the office of his preceptor in April, 1890, after having been graduated from the Ohio College of Dental Surgery in March of the same year.



He displayed the same precocious spirit as a young dentist that he had as a child. Everybody marvelled at his dental knowledge, for be it known, he had received first honorable mention upon graduation, and possessed real ability, both theoretical and practical. By persistence, tenacity, long hours, and honest work, he met with immediate success. His practice grew rapidly, and soon occupied most of his time and attention. However, he did have time between his last patient at night, and his breakfast the next morning to carry on a successful courtship; that is, successful so far as he was concerned, for in 1893, Miss Mary Louise Schaefer, of Gallipolis, agreed to float down life's troublous stream with him, and they were united in solemn matrimony forthwith. Who would dare say that his judgment and farsightedness were not again supreme? Those of you who have the privilege and pleasure of the acquaintance of Mrs. Brown, know the real secret of his continued and uninterrupted progress. I say this without casting any insinuation or reflection upon his ability, and without any idea of befogging the issue.

Dr. Brown, (for now he was known as such, in Gallipolis, and likewise was justly entitled to the prefix) attended his first Ohio State meeting in Columbus, in December, 1891, was admitted to membership and entered into the full spirit of dental society work, and activities. He served continuously on various important committees of the State Society, until elected to the presidency of same in 1906. The desire for conquest, and to conquer greater and more difficult problems was burning strongly within him; so in 1902, after due deliberation, and cautious consideration, he decided to cast his lot in the future in the city of Columbus, Ohio. I well remember the circumstances of his locating in Columbus, as he bought the practice, or rather equipment, such as it was, of Dr. Potter, who was at that time just across the hall from myself. It was then I made my first acquaintance with Dr. Brown, and I am glad to say that a mutual friendship has existed ever since.

He was immediately admitted to membership into the Columbus Dental Society, and served as its president in 1906. In 1902, in conjunction with a number of other prominent dentists, he worked hard for the passage of a dental bill, which was then before the State Legislature, and which subsequently became a law. He was appointed a member of the Ohio State Board of Dental Examiners, by Governor Nash, in 1902, was reappointed by Governor Herrick, in 1905, and by Governor Harris, in 1908. He served as secretary for six years, and had charge of the prosecution of all cases of illegal practice, and lost but one case. His narration of some of the incidents connected with this work is most interesting and entertaining. In one case, at least, it was necessary for him to allow the dental operation to be done in his own mouth that he might get sufficient evidence for prosecution.

Dr. Brown became a member of the National Dental Association in 1902, served on various committees, was elected corresponding secretary in 1908, re-elected in 1909, was elected recording secretary in 1910, and re-elected in 1911 and 1912. He was elected president of the National in 1913, and served as the first president under its reorganization; the reorganization, in which the state societies became components, and which increased the membership from seven hundred to more than twelve thousand. Dr. Brown served as secretary to the committee on reorganization, and as chairman of the committee on state and local societies, during the time of the active work in this connection.

He received, other than those already mentioned, the following state and federal appointments:

1910: Governor Harmon's personal representative to the opening of the National Oral Hygiene Campaign, Cleveland; Delegate to National River and Harbors Congress, Washington.

1912: Governor Harmon; Delegate to Fifteenth International Congress on Hygiene and Demography, Washington.

1913: Governor Cox; Delegate to Fourth International Congress on School Hygiene, Buffalo; appointed a member of the Ohio State Board of Health. He had the

distinction of being the first dentist ever appointed on this board, or any similar board in the United States. I think it appropriate at this time to quote from an address of Governor Cox, before the Ohio State Society, in 1914:

"I congratulate the dental profession in this state upon having brought about by the mere strides of your devotion to better ideals the recognition of this state, which has appeared for the first time, the placement of a dentist on the Board of Health in Ohio. (Applause.) And I congratulate you, members of the dental profession, upon having a man in this city as the Capital, who thinks and dreams of nothing except dentistry. (Applause.) The Lord implanted the microbe of dental enthusiasm deeply into the impression of Dr. Brown and your profession has profited by it as a result." (Applause.)

1914: President Wilson; Governmental Delegate to Sixth International Dental Congress, London, England.

I have no doubt there have been many more appointments of less importance of which I have no knowledge. With your kind indulgence, I will mention some of the organizations of which he is a member, and give you an incomplete list of papers written by him, although when I have finished, I am certain you will all quite agree that it would be much easier and require much less time to name the organizations of which he is not a member, and the subjects upon which he has not written.

Member National Dental Association; Ohio State Dental Society; Columbus Dental Society; Northern Ohio Dental Association; Panama-Pacific Dental Congress; National Dental Research Commission; American School Hygiene Association; Race Betterment Congress; Associate member New York First District Dental Society; Honorary member West Virginia and Georgia State Dental Societies; is also an Honorary member of several other local and state societies, the names of which are not in my possession at this time; Columbian Dental Congress; Fourth International Dental Congress; Lewis & Clark Dental Congress; Jamestown Dental Congress; Fifteenth International Congress on Hygiene and Demography; Fourth International School Hygiene Congress; was an incorporator of the Research Institute of the National Dental Association, and is also a trustee of same and member of the Research Commission; for three years was chairman of the Public Health Committee of the Columbus Chamber of Commerce; for two years was special lecturer, in both the medical and dental colleges of the Ohio State University; he is a methodist, an honorary member of the Xi Psi Phi Fraternity, a thirty-second degree Mason, and a Shriner.

At the 1917 meeting of the Association of Military Dental Surgeons he was elected an honorary member and presented a beautiful Tiffany watch with the following inscription: "Presented to Dr. Homer C. Brown, chairman of the legislative committee of the National Dental Association, by the Association of Military Dental Surgeons of the United States in appreciation of his untiring efforts to place dentistry on an equal plane with medicine in the public services, culminating in success on October 6, 1917."

At the 1917 meeting of the Ohio State Dental Society, at which meeting I presided, the following resolutions were passed:

*Whereas*, For many years the dental profession has earnestly sought to impress upon our supreme law-making body the need for efficient dental service in the ranks of our armed forces; and

*Whereas*, For some years after its establishment this service failed to attain its greatest possibilities for good because of the meager reward open to members of the dental corps, due to limitations of rank and promotion; and

*Whereas*, In this failure to recognize and suitably reward the services of the dental corps the entire dental profession has suffered an unmerited slight; and

*Whereas*, Through the persistent and untiring efforts of the committee on legislation of the National Dental Association, Congress did, on the sixth day of October, 1917, enact such legislation as gives to the dental corps of the army all that has been asked for it as to rank and promotion, thus removing from the entire dental profession the stigma heretofore resting upon it; and



*Whereas*, The chairman of the said committee on legislation of the National Dental Association has been particularly active and insistent for those high ideals with which he was from the first imbued, and to his disinterested devotion to duty, regardless of personal cost, final success has been chiefly due: Therefore be it

*Resolved*, That we, the Ohio State Dental Society in regular session assembled this fifth day of December, 1917, do hereby extend to our fellow member, Doctor Homer C. Brown, our most sincere congratulations and the thanks of the dental profession of the state of Ohio for that which has been accomplished largely through his instrumentality for the betterment of the dental corps of the United States army, for the recognition of our profession, and for the welfare of our men under arms; and be it further

*Resolved*, That these resolutions be made a matter of permanent record in our proceedings, that they be sent to the *National Dental Journal* and to THE DENTAL SUMMARY, and that an engrossed copy be presented Doctor Brown. Adopted, December 5th, 1917.

These were engrossed and presented to Dr. Brown in book form. A number of other dental organizations passed similar resolutions.

#### PAPERS

1900: Dental Aspect of Epilepsy.

1902: Pathological Conditions of the Antrum; The Relation of the State Board of Dental Examiners to the Dental Profession.

1904: The Duties and Responsibilities of the Twentieth Century Dentist; The Progress of Dentistry.

1907: President's Address, Ohio State Society.

1909: Dental Inspection and Oral Hygiene in the Public Schools; Oral Hygiene and Its Relation to Public Health; Re-organization of the Ohio State Dental Society.

1910: Attitude of State Government toward Public Health.

1911: Some Influential Factors in the Progress of Dentistry.

1912: A Dentist's View of the Anesthetic Controversy; Our Duties in Public Dental Education and Our Relation to the Public Press.

1913: The Relation of the Mouth and Teeth to Health and Disease; The Business Side of Dentistry; Oral Hygiene as a Factor in Human Efficiency; Pathological Oral Conditions as a Source of Some Systemic Disturbances. You will observe that his pen is becoming more and more prolific.

1914: The Status of Our Dental Organizations; The School and Municipal Dental Clinics as an Economic Proposition; Commencement Address, Ohio College of Dental Surgery; The Responsibilities of the State Society Officers; President's Address, The National Dental Association.

The following is a partial list of papers he has written since his President's Address:

The Dental Phase of Health Conservation; The Combined Agencies in Ohio Co-operating in a General Oral Hygiene Educational Campaign; The State Dental Society as an Important Legislative Factor; Dentistry in the Army and Navy as an Important Factor in Preparedness; Some Suggestions in Securing Adequate and Uniform Dental Legislation; Oral Hygiene as a Factor in Human Efficiency; The Dentist's Responsibility in Preventive Medicine.

Thus, you see, our good friend always has been willing and anxious to give of his time and knowledge, and never has refused a request for his services when such service to his mind would redound to the benefit of health, of humanity, and of the profession.

After having followed such an active career for so many years, you might think that he could and would have been relieved of some of his responsibilities and work, but such was not the case, I assure you. There still remained a gigantic task for him to perform and the use of his pen and all other resources that he possessed was soon to be called into action. He was chairman of the legislative committee of the National Dental Association. There was a crying need and an immediate demand for better army and navy legislation. The army and navy dental corps, in fact the entire profession had

turned their attention to the national committee, and as representatives of the profession expected, at least hoped, that suitable and equitable laws would be enacted under its supervision. They were not disappointed. For under the able and efficient leadership of our friend, and after the most intense and strenuous campaign ever waged in the interest of dental legislation the dental bill, of which you are all familiar and which places the dental corps of the army on the same status as the medical corps, was made a law when signed by President Wilson, on October 6, 1917. This marked one of the grandest achievements ever attained by the dental profession. It gave in a day more general recognition than had any other previous achievement. The status of dentistry was immediately raised in the eyes of the world and thereby was placed upon the profession tremendous responsibilities. Too much credit cannot be given the men who worked so efficiently, energetically, and faithfully in the interest of this law, and to our honored guest, it may be truthfully said, belongs more credit than to any other person for bringing the proposition to a successful conclusion.

It was almost entirely due to his persistence, dogged determination, (which some of us thought at the time was stubbornness, or bull-headedness) and his foresight that prevented the withdrawal of the Lodge Amendment. If this had occurred the probabilities are there would have been no dental law enacted. Great pressure had been brought to bear upon him from various places, and from most influential sources; but he was obstinate and could not be moved. He knew he was right, and all arguments failed to convince him otherwise. Few of his friends could agree that his position was tenable, and they advised him against it. In fact most all of them finally deserted the old ship, and he was practically left alone to guide it safely to port over a most tempestuous sea. His twin brother, Dr. Barber, sitting on his left, president of the National Dental Association at that time, remained on board alright, but the storm made him terribly sea sick at times. A man of less experience, knowledge, and wisdom most surely would have failed, but not so with Brown. The object of those wishing withdrawal of the Lodge Amendment was to combine a dental and medical bill, which was to be known as the "Owen Bill," but this bill never made any progress. Dr. Brown continued his activities as chairman of the legislation committee, in behalf of the navy dental corps until a satisfactory law was enacted for them.

In conclusion I say that for the tremendous work done for the profession by Dr. Brown, which in many instances was at a big financial sacrifice and physical strain, and for the results obtained, this occasion tonight is most befitting and proper, and by honoring our guest we are likewise honoring ourselves. (Applause.)

TOASTMASTER: It takes some nerve and backbone to say all these things to and about Dr. Brown, especially in the presence of one who has long been a public man and a newspaper man, an editorial writer of national reputation, one who not only writes editorials, but is a prolific writer in other directions. A good all-round fellow, secretary to the Governor of this state, editor of the *Columbus Evening Dispatch*. I take much pleasure in introducing Mr. Burba.

GEORGE F. BURBA: Ladies and gentlemen, guests: Dr. Swope passed by here a while ago, and said to me, "What the devil do you know about dentistry?"—by way of criticising my presumption in attending this meeting of the evening, I suspect. I answered, "I am a newspaper man; if I had to know something about everything I write about, I would be out of a job."

As to all that, I have noticed that some of you dentists are trying to break into newspaper work. It has not yet been explained to me how an American dentist working on the kaiser's teeth for twelve years, never happened to make a mistake. (Laughter.) I wish to God, my friend Custer, of Dayton, had been the kaiser's dentist. (Great laughter and applause.) He would have filled every tooth in his head with T. N. T., and followed that with a punch under the chin. (Continued laughter.)



I never see Dr. Brown but I am reminded of the experience of a colored boy, a few months ago, who was called to war headquarters to be examined. He was in great trepidation over this, hoping to be rejected. Returning from his examination he was asked, "Well, how did it turn out; all right?" And the boy answered, "Yes, I got along alright. But I got a lot o' things the matter with me. I never knowed I had a curved spine, nor only one lung, nor flat feet, like the doctor claimed. He said my instep would make a hole in the ground." And Dr. Brown said, "Then you do not have to go to the war?" "Oh yes," the boy replied, "They said I was just the kind of man they had been looking for."

We are gathered here tonight to talk about Brown, to pay tribute to him. I came to Columbus a few years ago as private secretary to Governor Cox, and when I went into office, there was Brown. (Applause and laughter.) And when I drew my last pay, and left the office, there he was again, waiting to see the new Governor.

But I can say this in all sincerity; Dr. Brown never came into the Governor's office to ask a favor for himself; always, gentlemen, it was something for the benefit or the uplifting or the promotion of the dental profession; the presenting of some bill calculated to benefit somebody else, some remedial legislation concerning his profession. Never did he come asking a personal favor. (Great applause.) I recall when Governor Cox appointed him on the board of health. I am now at liberty to say some things concerning that appointment, which might have been inappropriate, uttered at the time. Governor Cox had to face opposition to the appointment of a dentist on the board of health. He told them to go plumb to hell, and—he appointed Brown. (Applause.)

It is owing to such energy and persistency as Dr. Brown has shown, that the dental profession has so progressed. I know it actually has progressed. I recall the first toothache I ever had, and how I went to our family physician to have the tooth drawn, and how he got his only pair of old rusty forceps out of a bureau drawer, and then I knew that hell was to pay. He took hold of the best tooth I had and shook me off. (Laughter.) And the forceps never slipped. Hence I say, I know something about the progress of dentistry. I have watched this from the newspaper angle. I have watched this as newspaper men try to watch everything—this matter of professional advancement—and I have seen my own profession advance, too. It has so advanced that I am no longer ashamed, as once I was, to own that I am a newspaper man. And you no doubt, are no longer ashamed of being dentists, as you were twenty-five years or so ago.

Now there is just one thing that has brought this about; the chief agency is organization. And when one of you comes into my office, hereafter, I am going to ask you whom you represent, yourself or American dentistry; and if you say yourself, I shall have no time to fool with you. (Applause.)

Week before last I was in the Abraham Lincoln cabin, in Kentucky; a poor, miserable log cabin. There I saw this inscription, simple and to the point: "Stand with any man who is right as long as he is right; but leave him the moment he is wrong." Stand by your secretary, your officers, as long as they are right; leave them the moment they are no longer right.

In closing I want to tell a little story: Two colored boys died, one going to heaven, the other to the abode of lost souls. The more favored one one day telephoned to the other, "Sam, how you gettin' on, down dar?" "Oh, I'se all right," the other replied. "Has to wuk tol'bly hard, stirrin' up fires, siftin' ashes, an' all dat. Howse you gittin' on?" "Middlin'," says the other. "Ise got to git up early an' push de clouds along, an' fire up de sun and polish up de horns of de moon, an' light the stars. Fac' is Ise kind o' oveh-wuk'd, an' needs help; but you see help's so awful scaase up here." (Laughter.)

I hope when the Ohio dental profession gets through ministering to suffering humanity, and goes to its just reward, that help up there will not prove to be "so scarce." (Applause.)

TOASTMASTER: I really conceive that if Mr. Burba lives to a ripe old age, he will have so reformed that he will feel constrained to join the

dental profession. (Laughter.) We certainly hope sometime, to be with him "up there." (Laughter.) I am reminded of a story—An Irishman who had been wounded, was being operated on for a head-injury. As he recovered from the anesthetic, the nurse said, in answer to some inquiry he made, "The surgeon saw your brain, Pat." To which Pat replied, "Will yez kindly ask him to put that in writin'? Some o' me frinds thinks I haint no brain."

Dr. A. J. Lewis, chairman of the program committee read the following telegrams:

"I very much regret that it is impossible for me to attend the dinner given in honor of Dr. Homer C. Brown, for I feel that it would not only be a pleasure but a great privilege and honor to be there. In my several years' work on the legislative committee under Doctor Brown's able chairmanship, I found all the qualifications that make up a real man. He outdid our expectations and I feel that the entire dental profession is greatly indebted to him for our army and navy recognition. I keenly regret that Doctor Brown's health was such as to make his resignation necessary prior to the expiration of his term. My friendship and esteem for Doctor Brown and his friendship for me, the National Association and all that it stands for, reminds me of a Xmas card I have seen which reads: 'If Santa Claus should come and say, Whaddye want for Christmas, Eh? I'd ask for another friend such as he and he'd call me a hog, for that's what I'd be.'

"CHESTER B. GIFFORD, Norfolk, Va."

"My congratulations to Dr. Brown. To him more than any other belongs the credit of the present status of dentistry in the army and navy. My great regret is his resignation from the legislative committee. Had I known in time would have been with you this evening.

"HERBERT L. WHEELER, New York City."

"Permit me to join with your society in honoring Dr. Homer C. Brown. The dental profession owes to him a debt that never can be paid. Success was due in the face of opposition to his clear vision and bulldog tenacity. All honor to Dr. Brown.

"J. A. WEST, Des Moines, Ia."

"I regret I cannot be with you on this occasion when you are feasting and toasting my friend Dr. Brown. As representative of the navy dental corps I send words of cheer. We appreciate his good work in the past and I feel that his interest in the future will not lessen. May the good work go on.

"W. N. COGAN, Washington, D. C."

"Please extend to Dr. Brown my congratulations upon the occasion of the banquet tendered by the Ohio Society, also my appreciation of his untiring energy in connection with matters for the benefit of the profession. Regret that it is impossible for me to be present.

"ARTHUR D. BLACK, Chicago, Ill."

"The Iowa State Dental Society appreciates the service Dr. Homer C. Brown has rendered the profession and only regrets that it is Ohio instead of Iowa that claims him and does him honor. We wish for both of them all that is good.

"C. M. KENNEDY, President, Des Moines, Ia."

Dr. Lewis also read the following letters:

"I greatly appreciate your favor of the 28th ultimo inviting me to attend the dinner given at the Deshler Hotel on the evening of December 4th, in honor of Dr. Homer C. Brown. I would indeed be very glad to attend this banquet if my official duties would permit, but it is impossible.

"My intimate knowledge of dental legislation during the last three or four years compels me to say that there is no one to whose intelligent activities the dental profession is more indebted than to Dr. Brown, and I am glad to know that his professional brethren are paying him this well deserved honor.

"With kindly greetings to your distinguished guest and all assembled, I am

"Very sincerely,

"ATLEE POMERENE, Washington, D. C."



"I am very much obliged for your kind letter of November 28th, inviting me to be present at the dinner of the Ohio State Dental Society, on December 4th, in honor of Dr. Brown. It would give me great pleasure to accept but it really is out of the question, owing to the great pressure of work upon me here which makes it impossible for me to get away from Washington. I especially regret that I cannot be present because of my high regard for Dr. Brown, who has rendered invaluable service to the dental profession in which I always have taken the deepest interest.

"With kindest regards, believe me,

"Very truly yours,

"H. C. LODGE, Washington, D. C."

"I have just received your favor of November 28th, informing me that a dinner will be given at the Deshler Hotel, on the evening of December 4th, in honor of our mutual friend, Dr. Homer C. Brown, Columbus, Ohio. Dr. Brown is worthy of these expressions of esteem and mark of honor from his comrades, not only as a man and citizen, but also for the very valuable work in legislative ways which he has been doing for the dental profession. I always have regarded Dr. Brown as an honor to the profession and as a man striving to place dentistry in the best attitude before the public. I am sorry that I will not be able to attend the dinner, as I would like very much to join with you all in paying my regards to Dr. Brown, as well as enjoying an evening with a crowd of very fine gentlemen.

"In my work in Congress, during the last six years, I have come in contact with a great many gentlemen of your profession, and have always found them asking and striving for those things which were not only best for the profession, but best also, for the general public. It has been a pleasure to me to assist your association to obtain better laws and better legislative conditions, and I assure you, I shall be glad to have any of you call on me at any time I can be of assistance to you.

"With regards, I remain,

"Congressman, CLEMENT BRUMBAUGH, Washington, D. C."

"I am receipt of your very kind invitation to be present at the dinner in honor of Dr. Brown for whom I have the warmest personal regard.

"While it would afford me great pleasure to be with you, I regret that on account of great stress of official duties at this time I cannot leave the city.

"Thanking you for the honor, I am,

"Very truly yours,

"Surgeon General, U. S. Navy, W. C. BRAISTED,

Washington, D. C."

"Your very kind invitation to speak at a dinner given for Dr. Homer C. Brown just received, and it is with real regret that I will be unable to attend. December 2nd I will leave Camp Greenleaf for Washington, and a short tour of ten days over in Pennsylvania. If it were not for this, I certainly would attend and especially as the dinner is being given in honor of Dr. Brown, whom I very much admire, and is the one man in my estimation who has made the army dental corps what it is today although dozens seem to be trying to horn-in on the credit.

"I would appreciate your paying my respects to Dr. Brown for me and giving him the compliments that I surely would give were I to appear at your dinner.

"Thanking you again for your most considerate invitation, I remain,

"Very respectfully,

"Lt. Colonel, Army Dental Corps, JOHN H. SNAPP, Camp Greenleaf."

"I regret very much that an absence from the country prevents my accepting your invitation for December 4th.

"I wish to join in expressions of appreciation for Dr. Brown's good work during the war.

"Sincerely yours,

"W. C. GORGAS, Washington, D. C."

"Your letter having reference to your State Society meeting and banquet to be tendered Dr. Homer C. Brown, did not reach my desk in time for me to arrive to pay my respects, as I would liked to have done on that occasion for one who has done more than his part to assist in getting legislation for the dental corps of the United States army.

"If your letter had arrived the day before, I would have sent a wire expressing not only my appreciation but full understanding of the worth of Dr. Brown's efforts, as well as those of Doctors L. L. Barber, O. U. King and Emory Bryant, for I consider that these four men did more than any other similar group, and possibly as much as all others combined, to bring about the desired results.

"Hoping that you had a most successful meeting, I am

"Fraternally and cordially yours,

"W. H. G. LOGAN, Washington, D. C."

TOASTMASTER: It is my pleasure and privilege to introduce the next speaker, Major Heckard, of the U. S. Army.

MAJOR HECKARD: Mr. President, honored guest, ladies and gentlemen: I should like to make a speech, a really good one, and it to be about our friend, Dr. Brown. I doubt whether you would suspect, noticing our honored guest's youthful appearance, that we have known each other for thirty years. during which time I have crossed his path many times and gone to him for advice and assistance and he always has given me what I needed. Once when I was on my way to New York, and much needing the name of a dentist I wished to see there, and being unable to leave the train I telegraphed ahead to Dr. Brown, and when I reached Columbus there was Dr. Brown waiting for me with the desired information. I can recall many things like this Dr. Brown has done for me.

I esteem it a privilege and pleasure to be with you, with the Ohio profession. And the joy of being face to face with friends like Custer, Casto, Mills, Brown and others, gives me much satisfaction to add my word of appreciation for the honor our friend Dr. Brown has conferred on the profession by his untiring work. I thank you.

TOASTMASTER: We have present several guests, resident of cities in other states. I am now introducing to you a gentleman connected with a research institute, the Forsyth Institute of Harvard University. Dr. Percy Howe will next address you.

DR. P. R. HOWE, Boston, Mass.: As a matter of fact I know little as to the machinery of dental organization, but I have traveled around a good deal, to different societies, have known Dr. Brown a long time, and am glad to add my testimony to the fact already affirmed, that whatever he has done always has been for the elevation of the profession. He has forgotten himself in his energetic, self-sacrificing services to help the profession in every available way.

Dentistry is, in my opinion, a wonderful profession. It is more and more advancing to higher standards, and I am anxious that it should add in every possible way, to the credit it has won for itself. I am a little surprised, coming as I do from the East, to find you doing honor to one so young and good looking. If we, in the East, give a dinner to anyone, it is usually someone advanced in years, and as it happens occasionally, the honor seems a sort of death warrant.

Some friend said to me, "If you are called on to make a speech, tell them you are tickled to death and—then for heaven's sake sit down." (Applause and laughter.)

TOASTMASTER: We have with us a man from a distant city, a man who has a reputation for making things "stick," Dr. Tench, of New York, who will address you.

DR. R. W. TENCH, New York: Mr. Chairman, distinguished guest, ladies and gentlemen, I feel that it ill befits me to say much on this occasion, because I am not able to refer to an acquaintanceship with Dr. Brown, extending over the number of years



that some of you have, and as a consequence I cannot say so many nice things about him. I have held Dr. Brown in high regard since I first met him in the year nineteen thirteen.

A few years ago I was in Columbus, sitting at lunch at the Athletic Club when, on feeling a sudden sense of some one approaching, I turned to look around and beheld Dr. Brown approaching, with hand extended to greet me and welcome me to Columbus. He had met me at a gathering of a hundred or more men of whom I was one of the least, and had retained me in his remarkable memory notwithstanding the fact that there was nothing about our meeting that should have caused him to remember me. His action on this occasion impressed me deeply, and to my mind marked him as a truly great man, a man of simplicity and admirable character.

I deeply appreciate this opportunity to assist in doing honor to him on this occasion and furthermore I wish to assure him on behalf of the dentists of New York State, that we admire him for the wonderful things that he has been able to accomplish for the dental profession.

TOASTMASTER: I have the honor next of presenting to this assembly Dr. D. A. House, dean of the Indiana Dental College, at Indianapolis.

DR. HOUSE: Mr. Toastmaster, honored guest, ladies and gentlemen: It certainly is a pleasure to be a guest on this occasion, to meet so many bright and shining stars assembled to do honor to Dr. Brown. You may be interested to know that I was born in the best state of the United States; this nation-renowned state of Ohio. (Applause.) You do know that I came here from Indiana, the next best state of the Union. My first assertion—as to Ohio—I hope will not get beyond the confines of this room, because I have some friends in Indiana and I do not know just how they might take it. (Laughter.) Unless you tell on me, they need know nothing about this. If I had stayed in Ohio instead of going to Indiana, I might possibly have become myself one of the “bright and shining lights,” such as Brown, and Price, and Custer, and others I am accustomed to meeting several times a year. It is hard to say what fate might not do for a man, under certain conditions.

As a representative of the State of Indiana, on behalf of your many friends of the profession there, I assure you, Dr. Brown, of our pride and our great interest in honoring you for your many deeds undertaken and accomplished, in the way of helping the profession to reach the height it has attained.

I thank you. (Applause.)

TOASTMASTER: We have here a man who knows all about Brown. He will tell you. I am pleased to introduce to you Dr. Price, of Cleveland.

DR. W. A. PRICE, Cleveland: Mr. President, ladies and gentlemen, distinguished guest of the evening, I assure you this is a surprise to me. I had supposed I should be permitted, as was my preference, to do honor to our guest, Dr. Brown, in a silent tribute. Dr. Brown is one who stands for the thing he finds to be right, a man of great courage, who comes right out and espouses a cause which he believes to be right, regardless of possible disadvantage to himself. I know of several instances in which he has done that very thing, filled with pleasure and joy because he felt it to be for the advantage of humanity that he should so do.

I am glad we are recognizing his service in this way, for—

“If with pleasure you are viewing any work a man is doing,

If you like him or you love him, tell him now;

Don't withhold your approbation till the parson makes oration

And he lies with snowy lilies o'er his brow.

“For, no matter how you shout it, he won't really care about it;

He won't know how many teardrops you have shed.

If you think some praise is due him, now's the time to slip it to him,  
For he cannot read his tombstone when he's dead."

I have been wondering, Dr. Brown, what the great event of your life may have been, for every man must have had a great experience, who has accomplished great things, to make him strong for his accomplishments. Do you remember a song that came out a few years ago, which had to do with a sentiment pertaining to a young bride who stood on the brink of a Rocky Mountain precipice with her husband and, in a heedless moment, he stepped on a loose stone and was precipitated to his death? Upon that tragic happening is founded that beautiful song, composed by the stricken bride, "A Perfect Day."

"When you come to the end of a perfect day,  
And you sit alone with your thought—  
While the chimes ring out with a carol gay  
For the joy that the day has brought.  
Do you think what the end of a perfect day  
Can mean to a tired heart  
When the sun goes down with a flaming ray  
And the dear friends have to part?"

Another illustration is found in the following incident:

One day a traveler was proceeding along the hot dusty highway and he saw a sign by the roadside which read, "There is a cool spring within this gate: come in." He went inside and refreshed himself and there saw a second sign which read, "There are apples in the summer house to which you are welcome." He then inquired at the door of the cottage, "Who placed these signs here and why?", and the reply was, "Why Ma did it," for the old man who came to the door had long since learned to give Ma credit for happy, thoughtful things about the place. That traveler was Mr. Foss and that incident gave him a new vision of life and he went from there and wrote that beautiful poem "The House by the Side of the Road."

"Let me live in the house by the side of the road,  
Where the race of the men go by—  
The men who are good and the men who are bad,  
As good and as bad as I.  
I would not sit in the scorner's seat,  
Or hurl the cynic's ban—  
Let me live in a house by the side of the road  
And be a friend to man."

I think, Dr. Brown, you must have had some great experience like this, and I would not be surprised if your devoted wife has been an important part of it. It seems to me that you must have gotten a vision of humanity's need, and your faithfulness to that vision has given you courage and strength to do what you could for its realization, by helping the dental profession and humanity. We thank you cordially for it. (Applause.)

TOASTMASTER: The next gentleman whom I am introducing has probably a longer acquaintance with Dr. Brown, than any one present. We would like to hear from Dr. Ross.

DR. A. O. ROSS, Columbus: Mr. Toastmaster, honored guest, ladies and gentlemen: It has been my pleasure to know Dr. Brown for a long time and I am very glad to be here tonight, and hear the nice things said by the preceding speakers about my old student friend.

I first knew Dr. Brown as a student in the Ohio College of Dental Surgery, Cincinnati, Ohio. He probably remembers two central incisors which he built up with No. 4 gold foil, using a hand mallet. This was unusual work at that time, and served to show the kind of stuff that was in the young man. Very few young men would have stuck



until they were completed and polished perfectly before the patient was permitted to go. This so impressed me that I have kept in close touch with Dr. Brown ever since and have found him to be a very warm and true friend. Dr. Brown and I have served on many committees together, in the Local, State and National associations. While we did not always agree we were always friendly in our differences. The last committee which we served on was the National legislative. We let Brown do the work, and you all know how well it was done. We had a right to expect great things of Dr. Brown. He has been well brought up. Mrs Brown has kept the home-fires burning, and every time I have been there she served quail on toast. "Oh boy!" Is it any wonder that he is a bird? Thank you. (Applause.)

TOASTMASTER: Dr. Ross must be some instructor, to turn out pupils of this description.

Dr. Mills has been a good friend to all of us. I have eaten with him, drunk with him, been up late of nights with him, at home and abroad, and I assure you he is a man of ability, a good judge of many things, knowing many things about Brown, if he will only tell. I should like to hear from Dr. Mills.

DR. CHAS. W. MILLS, Chillicothe: Mr. Chairman, ladies and gentlemen, this is a great surprise to me. Not a word by way of intimation of my being called upon have I received. I know a lot of things I might say about Dr. Brown, but after listening to the beautiful talks of Dr. Ross, and Dr. Casto, and our guests from the East, I feel incapable of saying anything.

I am here because I love Dr. Brown and Mrs. Brown. What few notes I may have had are in the pocket of my evening clothes, and as Dr. Custer is parading in them, I am at a loss what to say!

One thing however, I will say and that is that Dr. Brown never forgets his friends. He is one man who never forgets to do the little things, which means so much to all of us. His thoughtfulness of me on several occasions has been of great help to me. My only complaint against him is that on one occasion, when passing through Chillicothe, he forgot that my home was open to him and Mrs. Brown. The hotel was crowded, but fearing that it would not be convenient to accept my hospitality he sought shelter in an indifferent hotel, much to the discomfort of both of them. I thank you. (Applause.)

TOASTMASTER: There is an ex-president of the state society with us tonight. We would like to hear from Dr. Way.

DR. T. I. WAY, Cincinnati: Mr. Toastmaster, honored guest, ladies and gentlemen: I count it a privilege to testify to the high esteem in which personally I hold Dr. Brown. I have had occasion, through the intimacy of close association with him, more than once to express to him my admiration and my appreciation of all he has accomplished.

As between Dr. Brown and myself, it is really not necessary that I should give any expression of this regard. Through the years of our close association, many times have I whispered in his ear my appreciation of his successful efforts in behalf of the dental profession.

As I have sat here tonight and listened to the numerous expressions of appreciation of Dr. Brown, I recall an instance, on March 17th, 1917, when I sat at a banquet in which we had much to eat and to drink. Later we had an outflow of patriotic speeches. The host of the occasion seeming to tire somewhat of words, mere words, laid his hand on my shoulder and said, "Tim, why this projecting of carbon dioxid and other gases on the adjacent atmosphere? When the time comes for action, a lot of us will go over there and 'clean up'."

That is what our friend Brown has done; he has "cleaned up." In connection with his work of securing dental legislation, he did not "project carbon dioxid," but he went in and "cleaned up."

In Dr. Casto's report, he said Dr. Brown was a good selector. You will bear me out in this statement that those men who have "made good," who have succeeded conspicuously, have been largely aided by their helpmates. As to Dr. Brown, it is no doubt a fifty-fifty instance as to himself and Mrs. Brown.

I propose this toast: "This to Mrs. Brown and her husband." (Applause.)

TOASTMASTER: There is a little suburb of Columbus, to the westward a few miles, where resides a man who has traveled much by sea and land, as well as by air. Much of late has he used the last mentioned manner of transporting himself. Let us hear from Dr. Custer.

DR. L. E. CUSTER, Dayton: Mr. Chairman, ladies and gentlemen: A few moments ago I was recalling a notable favor Brown once did me. Some seven or eight years ago, I was in San Francisco, where I knew not a single soul. All of a sudden Brown came around a corner on me. We exchanged greetings and—he cashed a check for me. I have always felt grateful to Brown for all he has done for the profession, and—for cashing that check. I thank you, just as I thanked Brown. (Laughter and applause.)

TOASTMASTER: Our next speaker is Dr. Semans, whom I take pleasure in introducing to you.

DR. H. M. SEMANS, Columbus: Mr. Chairman, ladies and gentlemen, guests: I will tell a story directly concerning our friend, Homer Brown. In the summer of 1882, a man was driving along near the Ohio River and saw a boy in a nearby field plowing. The boy came down to the fence and asked, "Where are you from?" The man answered, "I am from a place back there where they do big things." The boy answered, "You mean some large city. That is where I mean to go, some day."

The boy was our friend Homer. Eighteen years after that, or thereabouts, one afternoon about four o'clock, I was called up by Homer Brown, who said, "Have you a little spare time? If so, let us go over to the State House." A dental law was supposed to have been passed, which was to be a big thing for this state of Ohio. In that peculiar way of his he got into certain corridors and rooms of the building of which I had no knowledge, and we examined the archives of the Secretary of State, after which he insisted on examining the daily records of the legislature the day before, giving a description of the bill which had just passed. Looking it over in a painstaking way, he found that as passed by the House and Senate, it was all right, but as it appeared when ready to be submitted to the Secretary of State, and to be signed by the Governor, it was wrong. It took only a word or two to make it all wrong, and Homer detected the error, and here is another story. The Legislature had adjourned until ten o'clock Monday morning, at which time, as those who are familiar with legislative proceedings know, but few attend the meeting, and then they would adjourn for the session. The next morning, as I remember, we found a member of the Senate in the Senate Room, packing up some papers; a member from Berea; and we called the matter to his attention. Our bill was a House bill. Dr. Brown explained the error in the bill to him in a clear, precise way, insisting that something should be done. Professor Warner, the Senator, rose to the occasion, saying he would look after the matter. On Monday morning, Senator Warner having only a minute or two before the Senate convened, and then to be adjourned for two years, reached the ear of the Lieutenant-Governor, the presiding officer, and asked him to have certain errors corrected in the bill. This was done, and was immediately carried to the Speaker of the House, who had just enough time to call attention to the fact that a few errors had crept into the bill. And so ultimately it came about that the bill became a good law, and this prompt action of Dr. Brown, saved this law of which we are so proud. (Applause.)

TOASTMASTER: I have noticed all the evening a gentleman taking notes of what has been said. I am going to interrupt him; give him a little chance to rest. I call upon Dr. Sage to give us a few words.



DR. FRANK SAGE, Cincinnati: In the war just ended, we have had a remarkable exhibition of British pluck and tenacity. The English have been called the Romans of modern times. The ancient Romans subdued the entire world of their day, including the Greeks, who with their before-irresistible phalanx had up to the time been deemed invincible. The thing about the ancient Romans, as about the English of today, which impresses us is, that they *did things*. The English, in the war just ended, made mistakes, yet as usually they do, they muddled along until victory crowned their efforts.

The lesson taught us by Dr. Brown's achievements is that the dentist, while still a young man, before it is too late, should seek more often than most dentists do, to impress himself on the community in which he lives, by interesting himself in local affairs, perhaps municipal affairs, local politics, what not, by way of attesting his interest in the things which are of general interest to his fellow-citizens. Too many wholly overlook the advantage of thus showing themselves a part of the membership of the community, instead of merely serving in their somewhat restricted way, the welfare of all.

Someone asking Senator Beveredge what he considered to be the first requisite to success in a young man, received this answer: "Courage."

Dentists—and many others—are often unduly timid; they are too much afraid of ridicule, of criticism. The first show of opposition causes them to weaken, perhaps to give over entirely, some wholly worthy purpose. Many a man, having reached middle age, old age, is filled with regrets that he did not early see all this. He sees how he might have been of far more importance in the estimation of his fellow townsmen, his daily associates, had he only dared more. This is a lamentable thing; it should not be so.

I recall a notable instance of courage exhibited in the face of ridicule, many years ago, when I was a student at Denison University, over here in Granville. There was in the class just ahead of mine, a young man who always was asserting himself, never offensively, I will say, yet with a certain self-confidence which was always, no matter what the emergency, in evidence. If there happened to be something requiring extraordinary effort, unusual ability, to be done presumably by a student, something which made others hesitate, possibly something ordinarily regarded as beyond the scope of a student's attainments, if no one else was willing to undertake it, this young man was fairly certain to volunteer to do it. Thus I recall the night of General Lee's surrender; we were jollying in the little town. Two or three thousand people were present to listen to orators who had been sent for to Columbus, Newark, and other cities. Bonfires were burning; houses were brilliantly illuminated. After the notables of the occasion had had their say, this young man climbed up upon the platform which had been erected for the speakers, being withheld by force, by his fellow students, who deemed it presumptuous in him, a mere student, to essay such a thing. But he broke away from them, and ascending the platform, threw out an arm, and projecting his voice into illimitable space roared out, "American citizens!" A voice far down the street roared faintly back, "What's th' matter with you!" This causing much merriment, hootings, cat-calls, cries of derision, greeted the would-be orator. This he withstood, standing with folded arms, smiling right and left. When the tumult had subsided he went on with his speech.

I often have wondered what might have resulted, had he allowed himself to be driven off that platform. Many a young man would have retreated, covered with shame, mortification.

This young man rose to eminence in the legal profession, became attorney-general in the cabinet of Grover Cleveland, served within recent years two terms as governor of this State of Ohio. Old Jud Harmon; the Hon. Judson Harmon.

Dr. Brown is a man who has done things. We all honor him for the courage and persistence which has carried him through difficulties to a successful accomplishment of the many tasks he has assigned himself. I thank you.

TOASTMASTER: I am reminded of an Irishman who got up in a Western saloon and announced, "I can lick any man in Kansas City." No one responding, he added, "I can lick any man in Missouri." There-

upon a big guy got up and said, "I think this man has taken in too much territory." In my associations with Brown, I have sometimes thought he took in too much territory. Yet he always "got away" with it, and we will now be pleased to hear from Dr. Brown.

(DR. BROWN, responding): Mr. Toastmaster, Mr. President and members of the Ohio State Dental Society and guests: I am deeply sensible of the generous and complimentary expressions of those who have spoken; the telegrams and letters which were read; the beautiful flowers from the Columbus Dental Society, and your enthusiastic reception. For all these courtesies, I am indeed most grateful and desire very cordially to thank you. Further than this, my words of appreciation may fall far short of what I wish to convey, inasmuch as I am greatly handicapped in attempting an appropriate response under such unusual harmonious conditions, since most of you are probably aware that in promoting the very things you are so graciously commending, it was not my good fortune to have the unanimous support which seems to be mine tonight. (Applause.)

Twenty-six years ago today I was elected a member of this society. This was the first dental organization with which I became affiliated and I considered that I had been honored. Since then it has been my privilege and pleasure to be a fairly active member and you have honored me on many occasions, all of which I have appreciated and have endeavored to show this by an unselfish and untiring service to the tasks assigned. And now when I realize that this society was organized twenty-six years before I became a member and that during this period of fifty-two years no similar testimonial, to my knowledge at least, has been tendered any one of its members, it very forcibly reminds me of the full significance of this signal honor, and I greatly appreciate this special recognition.

Some very complimentary references have been made to Mrs. Brown's sacrifices in connection with my outside dental activities, and I am much pleased with this. In furthering the interests under discussion it has required many sacrifices in energy, time and money and a decided restriction in our mutual social and recreative privileges. Also, being engrossed in such exacting and uncertain work is neither a stabilizer in an active dental practice nor a strong factor as a home harmonizer; but my chosen life-companion always has been deeply interested in my undertakings and her words of encouragement have been a positive stimulus to me at all times. In this legislative work alone it has been necessary for me to travel approximately twenty-five thousand miles. Some of my trips to Washington were made on such short notice that it required the dismissing of patients from my chair and to be on the train in less than one hour's time, and I assure you I made only such trips as seemed imperative.

Reference has been made to the loyal support received, the strong opposition encountered and some of the scars resulting therefrom. Yes, very generous support was received from the progressive element of the profession, both in my connection with the re-organization of the National and in promoting our legislative program; and it always will be a source of great satisfaction to think of those in various parts of the country who so loyally co-operated in both propositions. In this connection, it can be very appropriately stated that the re-organization of the National was the first requisite in making possible adequate dental legislation, as well as in greatly stimulating most of the other recent advancements in dentistry. The opposition within the profession to this re-organization, especially from those prominent in dental affairs, was difficult to understand; but it was much stronger than that encountered in our legislative efforts. However, when success seemed assured, in both instances, the usual "band wagon" tactics of most of the opposition was more or less similar. Naturally, we had much outside opposition toward our legislation, but we also received some influential non-professional support. As has been very appropriately stated, some "scars" resulted from these aggressive campaigns, but such as I may have acquired may not annoy me as much as they



may disturb those who through any selfish motive unsheathed their sword in opposition to the endorsed program of organized dentistry.

No chairman ever served with more loyal co-workers than the members of my committee. We worked out and approved a general policy and as chairman I was expected to secure the best possible results, and I consider myself fortunate in having the full co-operation of the following: The loyal support and confidence of my committee, and likewise Doctors Barber and King, as president and secretary; the ever-ready and constant aid of Doctors S. D. Boak and B. C. Warfield, and other members of the army dental corps further removed; the invaluable and dependable assistance at all times of Dr. Emory A. Bryant; the full recognition of the merits of our cause by such members of Congress as Senators Pomerene, Lodge, Swanson, Fletcher, Lewis and Wadsworth; and Congressmen Dent, Kahn, Clark, Padgett, Brumbaugh, Keating and others. In addition we were privileged to enjoy friendly relations with Secretary Baker, General Gorgas and General Braisted, and by taking every advantage of this highly-favorable combination, and giving very close attention to the varying and shifting details, plus quite a liberal portion of "luck", the legislation of October 6th, 1917, which placed the army dental corps and dental students on an equal status with the army medical corps and medical students, was made possible. With some slight modifications we had the same influences back of the naval corps legislation, in which President Logan gave cordial support.

Please understand that there were two legislative Acts passed by Congress for both army and navy dental corps during the four years of which I was chairman of this committee. First, that for the army embodied in the General Defense Act of June 3, 1916, and that for the navy, Aug. 29, 1916. In these, provisions were made for two additional grades in both corps, that is, captain and major in the army and the corresponding grades in the navy, but only after a rather unusual length of service for promotion. Also, provision was made for an officers' reserve corps, dental section, the first dental reserve service provided for the army, and some improvement was made for the naval reserve corps.

When we first appeared before the Military Committees of the Senate and House, on February 2nd and 3rd, 1916, the army dental corps consisted only of thirty-six first lieutenants and thirty-nine acting dental surgeons. At that time applicants entered the service as acting dental surgeons and served three years as such; then upon examination were commissioned as first lieutenants; but that was as far as they could advance. In fact there was a strong sentiment in Congress at that time to eliminate the rank altogether and one of our hardest fights was to retain this. The two important features in what was known as the Pomerene Amendment in 1916, were the retention of rank and the counting of contract service when computing length of service for promotion. We were able to retain the provision for rank only, but were fortunate later in fighting out the other point through a favorable interpretation, after two adverse decisions had been rendered. This was more than the medical corps had secured, as they never were able to get their contract service counted for promotion. Further, from the discussion while this amendment was before the Senate, it developed that a number of Senators were disposed to grant the dental corps the same status provided for the medical corps; and thus we were stimulated to take advantage of this friendly sentiment, together with the very favorable developments in connection with the dental service in the armies of the European War. To that end new legislation was drafted and variously approved some months prior to the declaration of war by the United States. General Gorgas approved this April 9, 1917, which was before the National Council of Defense and its subdivisions were organized, with the understanding that we should push it at the first favorable opportunity. However, he vigorously opposed it when it was introduced as an amendment to the first subsequent legislation relating to the medical department, but his previous endorsement was a very positive influential factor in our success. We also were confronted with the strongest possible opposition from the medical board, National Council of Defense, as well as the regular and reserve medical corps of the army. Prob-

ably our legislation would not have been introduced just at that time had certain of our officials connected with the committee on dentistry, general medical board, National Council Defense, promptly advised me of some of their plans for general legislation for the medical department of the army. As a member of the sub-committee on legislation and enrollment, committee on dentistry, general medical board, National Council Defense, all dental legislation emanating from this source was to be especially assigned to me, but after their plans had been agreed upon ten days elapsed before I was advised of them, and only then after we had our National Dental Association's legislation under way. However, it may be very fortunate that I did not know this since we stood firm in support of the Lodge Amendment in face of the strongest possible opposition, many of whom were my friends, as has been stated tonight. Had we followed the lines of least resistance and withdrawn our amendment, the probabilities are that we might never have been so successful in securing such favorable legislation.

I have discussed briefly some of these points, since few of these details are known, except to a limited number; and further, because so many misstatements relating thereto have been made; but I trust most of them resulted through lack of information. I am not especially interested so far as the credit for this legislation is concerned, except that I am of the opinion that there is ample credit for all those who loyally co-operated to make this a success, regardless of the extent or limits of their support. On the other hand, I fully appreciated my position and took what might be termed "a gambler's chance" in resisting the heavy pressure for withdrawal; for had we failed I fully realized the criticism which would be heaped upon my head and mine alone, as many of you know.

It was a keen disappointment when Senator Lodge was forced to return home, on account of his physical condition, about two weeks before Congress adjourned, October 6, 1917, but he first safeguarded our interests by arranging with Senator Pomerene to look after his dental amendment. We then modified this very slightly, eliminating a nonessential clause and adding a few words to strengthen another section. Then when it was being considered by the Senate, the day before Congress adjourned, the dental student provision was adopted. Under conditions existing at that time, this was a very important amendment; but I never have assumed any authority for its adoption by the Senate, but I did do everything possible, in the limited time available, to get the leaders in the House to accept the entire medical and dental provisions of the Dent Bill, H. R. 4897, as amended by the Senate. On the other hand, we might not be out of order to inquire just what chance the dental student provision would have had except for the fact that we succeeded, in the face of great odds, in keeping the Dental Corps Amendment a live issue. Then, after failure to provide exemption by regulation, as was done for the medical students, it was recognized that this addition would make an important link in a complete equal-status chain and it was thus easily adopted by the Senate.

The one regret I have is that I did not get more actively connected with some dental war work, but this legislative activity was not compatible with army and navy regulations and the navy portion was not completed until July 1st, 1918. It then seemed that our original legislative program had been satisfactorily completed and, in order to become eligible for more direct war service, I resigned as a member of the legislative committee one year before my term expired, at the National meeting in August.

At the time of my resignation I was handicapped with an acute attack of neuritis which later developed staying qualities, with some further lessened resistance, until by the time I was making any decided improvement the armistice had been signed. However, I am conscious of the fact of having made at least a small contribution to the comfort and efficiency of the personnel of the army and navy, through my efforts to improve their dental service. This, and such commendation as has been accorded tonight, together with the fact that I have come in intimate touch and established some very friendly relations with many prominent men in public life, will act to partially counterbalance my regret regarding active service.



In conclusion, I trust that this improved status will serve as a positive stimulation for our profession to increase their efforts in aiding in the solution of the many complicated medical and dental problems, as only then can we render the greatest service. Then, as time goes on it always will be pleasing to recall this occasion and I am quite certain your kind words will stimulate me when the evening shadows are gathering, and when the end of the trail is reached I trust there still may be those who will recall this occasion and remember I did what I could to advance the best interests of my chosen profession, thereby the better equipping it to serve suffering humanity.

"When Earth's last picture is painted, and the tubes are twisted and dried,  
When the oldest colors have faded, and the youngest critic has died,  
We shall rest, and, faith, we shall need it—lie down for an æon or two,  
Till the Master of All Good Workmen shall set us to work anew!

"And only the Master shall praise us, and only the Master shall blame;  
And no one shall work for money, and no one shall work for fame;  
But each for the joy of the working, and each, in his separate star,  
Shall draw the Thing as he sees It, for the God of Things as They Are!"

Again, permit me sincerely to thank you. (Prolonged applause.)  
(Adjourned after singing America.)

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### Nebraska State Board

The Nebraska Board of Dental Secretaries will hold its examination as follows: The practical work at the Creighton Dental College, Omaha, June 2 and 3, and the theoretical work at the Capital Building, Lincoln, June 4, 5 and 6. A special examination is being arranged for about one month later.

S. A. ALLEN, *Secretary*.

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### Tennessee State

The Fifty-second Annual Meeting of the Tennessee State Dental Association will be held at the Hotel Hermitage, Nashville, September 4, 5 and 6.

From all appearances our program promises the greatest meeting ever.

JAMES J. VAUGHN,

*Chairman Publicity Committee.*

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### South Carolina State Board—Change of Date

The meeting of the South Carolina State Board of Dental Examiners has been postponed until June 30th. The examinations will begin promptly at 9 o'clock, Monday morning, June 30th, at Bamberg, S. C.

All applications *must* be in the hands of the secretary by June 20th. Application blanks and further information may be obtained by addressing,

R. L. SPENCER, *Secretary*,  
Bennettsville, S. C.

# CORRESPONDENCE

## Preparedness League Notes

### OUR DUTY

Early last Autumn the president of the League wrote to different members of the dental corps in France, seeking information as to the condition of the dental profession in the devastated regions, but has been unable to get definite data except from Captain Blake Sears, who has, during his available time, been making a survey of those conditions which call for aid from the dental profession of America and Canada.

In a partial report Captain Sears states that there is a great need for help, and strongly approves of action in this direction. The matter was brought to the attention of Dr. Villian, who heartily endorses the movement and is anxious to collaborate with us. He was one of the organizers of a society in Paris to carry on this work. Funds were raised, which already have been exhausted, and the time is opportune for us to show our fraternal spirit by raising funds and supplying equipment for this society to place where it is most needed. Before this notice will be printed, we hope the movement will be well under way and some funds made available for this purpose.

### HOME SERVICE WORK

We are getting reports from different parts of the country of the excellent service our members are giving the worthy families of the soldiers and sailors. This is a most commendable object, and we sincerely trust that it will be continued so long as there is actual need. It is a splendid and practical way of demonstrating our readiness to help compensate for the sacrifices made by our boys.

J. W. BEACH, *President.*

### The Forsyth Dental Infirmary Permanent Staff Appointments

A competitive examination of graduates in dentistry (of less than three years' standing) for appointments to positions on the permanent staff for full and one-half time service will be held early in June at the infirmary.

Appointments will be made for one or two years as follows:

Full time service requiring operative five and one-half days a week, at a salary of \$1,000 a year.

One-half time service requiring operating six half-days a week, either forenoon or afternoon, at a salary of \$500 a year.

These appointments will be made subject to satisfying the requirements of the Massachusetts State Board of Registration in Dentistry, and to "qualifying" in the practical work of the clinics during one month's trial.

Members of this staff are entitled to the advantages of reports and clinics by experts in the various branches of dentistry from different parts of the world in addition to the numerous special and regular clinics and lectures.



Operators after serving four months are eligible, by qualifying, for appointments in the special clinics where post-graduate work is given.

The operators on this staff have the advantage of the clinics and lectures of the Post-Graduate School of Orthodontia.

The infirmary clinics provide unusual advantages in the various departments of the institution where operative dentistry, orthodontia, nose and throat and oral surgery, extracting, novocain technic, radiography, pathological diagnosis and research work are continually carried on.

The average number of cases treated daily in the various clinics is over three hundred.

Supplies and necessary operating instruments are furnished; up-to-date apparatus including electrical engines, sterile instrument trays, fountain cuspidors, compressed air, and the modern operating-room-type of lavatories are available for use.

A diploma of service will be issued by the trustees to each member of this staff who has completed this term of service in a satisfactory manner.

Applications for the above positions should be made not later than May 15th.

Information and the date of the examination will be furnished to those interested.

HAROLD DEW. CROSS, D.M.D., *Director*,  
140 The Fenway, Boston, Mass.

### **The Forsyth Dental Infirmary—Under-graduate Assistants**

During the months of June, July, August and September an opportunity is offered by the trustees of the Forsyth Dental Infirmary for Children to a limited number of under-graduate students to act as assistants in the clinics of the infirmary. This privilege permits a student to obtain unusual clinical advantages in the various departments of the institution where operative dentistry, orthodontia, nose and throat and oral surgery, radiography, pathological diagnosis and research work are continually carried on.

Operators' gowns, instruments and filling materials are furnished. Over three hundred children are treated daily.

For further details apply before May 15th to the Director,

DR. HAROLD DEW. CROSS,  
140 The Fenway, Boston, Mass.

### **A Notable Instance**

EDITOR SUMMARY: J. J. Smith, born at Plum Spring Hill, Washington County, Illinois, March 24, 1819. Moved to Bonham, Texas, the year that James Buchanan was elected President. Then about 1870 came to Kimble County, Texas. Recently celebrated his one hundredth birthday. On that day I extracted a lower six-year molar for "Uncle Johnny". He has yet about half his teeth and in very good condition. Has always used tobacco, smoking and chewing, and now plows and works his garden.

P. H. ROGERS, D.D.S., Junction, Texas

### **Root-Resection**

Root-resection should not be attempted if the bone is absorbed over more than the apical third of the root, but such a tooth should be extracted and the socket curetted.—*Earle H. Thomas, Dental Review.*

### **Caring for Saliva Ejectors**

Keep a goodly supply of saliva ejectors of various sizes immersed in a 10 per cent. solution of hydrochloric acid. Have assistant change ejectors after patient is in chair.—"C", *Dental Review.*

# SOCIETY ANNOUNCEMENTS

## Indiana State

The Sixty-first Annual Meeting of the Indiana State Dental Association will be held at the Claypool Hotel, Indianapolis, on Tuesday, Wednesday and Thursday, May 20th, 21st, and 22nd, and a sincere invitation is extended to all ethical dental practitioners to attend, regardless of whether they are located in Indiana or some other state.

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## Ohio State Dental Board

The Ohio State Board of Dental Examiners will hold their regular examination for applicants who desire to practice dentistry in Ohio at the Ohio State University, the fourth Monday of June, 1919, examination will begin at 8 o'clock A.M.

Applications must be in the hands of the secretary by June 12th.

A. F. LINSOTT, *President*, Marion, Ohio.

HOLSTON BARTILSON, *Secy.*, 150 E. Broad St., Columbus, Ohio.

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## Tennessee State Board

The next meeting of the Tennessee State Board of Dental Examiners will be held in Nashville, Tennessee, June 30th, 1919, for the examination of candidates of registration.

All applications must be in the hands of the secretary on or before the 20th of June. For further information address F. W. Meacham, Secretary, 911-12 Hamilton National Bank Bldg., Chattanooga, Tenn.

Chattanooga, Tenn.

F. W. MEACHAM, *Sec'y-Treas.*

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## Pennsylvania State Board

The next examination by the Pennsylvania Board of Dental Examiners will be held in Philadelphia and Pittsburgh, on Monday, Tuesday, Wednesday, Thursday, June 23, 24, 25 and 26, 1919. The practical examination will be held on Monday, June 23rd, the first day, in the University of Pittsburgh Dental School, in Pittsburgh, and the Evans Institute, University of Pennsylvania, Philadelphia. The operative examination will be held at 8:30 A.M. and the prosthetic examination at 1:30 P.M. The theoretical examination will be held at the College of Pharmacy, in Pittsburgh and at Musical Fund Hall, Philadelphia.

Application papers can be secured from the Department of Public Instruction, Harrisburg. For further information, address the secretary

4630 Chester Ave., Philadelphia, Pa.

ALEXANDER H. REYNOLDS.



**Northern Ohio**

The Northern Ohio Dental Association meeting will be held in Cleveland, Ohio, Monday, Tuesday and Wednesday, June 2nd, 3rd, and 4th, at Hotel Stattler.

GEO. B. SMITH, *Secretary*.

**North Carolina Dental Society**

The North Carolina Dental Society will hold its next Annual Session, June 25th, 26th and 27th, at Asheville, N. C., Headquarters Battery Park Hotel.

W. T. MARTIN, *Secretary*.

Benson, N. C.

**Indiana State Board**

The next meeting of the Indiana State Board of Dental Examiners will be held at the State House, Indianapolis, June 23rd to 28th, inclusive. For application and instructions, write to

H. C. MCKITTRICK, *Secretary-Treasurer*.  
605 Hume-Mansur Bldg., Indianapolis.

**West Virginia State Board**

The next meeting of the West Virginia State Board of Dental Examiners will be held in Wheeling, W. Va., beginning at 9 o'clock on Tuesday morning, June 24th, 1919. For further information and application blanks address R. Mason Hite, Secretary, Mannington, W. Va.

R. MASON HITE, D.D.S., *Secretary*.

**Kentucky State Dental Association**

The Fiftieth Anniversary-Jubilee Meeting of the Kentucky State Dental Association will be held at Louisville, Ky., June 9-10-11-12, 1919. A Post Graduate Course of unusual interest has been planned. Address all correspondence to

W. M. RANDALL, *Secretary*.

Louisville, Ky.

**Vermont State Board**

The next meeting of the Vermont Board of Dental Examiners, for the examination of candidates to practice in Vermont, will be held at the State House, Montpelier, commencing at 2 P.M., on June 30th, 1919, and continuing for three days.

To be eligible for examinations a candidate must be : *First*, twenty-one years of age. *Second*, a graduate of a high school of the first class, and *third*, a graduate of a reputable dental college.

Applications must be in the hands of the Secretary not later than June 21st. For further information apply to

HARRY F. HAMILTON, *Secretary*.

Newport, Vermont.

**Annual Meeting of the Michigan State Dental Society,  
Held in Detroit, April 7-12, 1919.**

Michigan claims the honor of being the oldest dental society in the world, being antedated only by a local society of Philadelphia. The meeting just held in April being the sixty-third.

Members of dental societies are demanding meetings that teach them something practical and an improvement on the old methods. This demand has been met by the Detroit Dental Clinic Club, comprised of about sixty members of the First District. The club is divided into six sections as follows:

Preventive Dentistry, R. W. Bunting, Director; Crown and Bridge, Marcus L. Ward, Director; Porcelain Crown, Albert L. LeGro, Director; Prosthodontia, Wm. A. Giffen, Director; Indirect method for Inlay and Crown Restorations, E. B. Spalding, Director; Oral Surgery and Local Anesthesia, Don M. Graham, Director.

Each section is arranged in a progressive clinic and the subject taught in such a manner that the interested members can readily put the same into practice.

This year's program was with one exception, an all Michigan program as follows:

Russell W. Bunting, Ann Arbor, Review of Dental Science and Literature; John Travis, Ann Arbor, Some Phases of Cast Gold Inlay; R. W. Bunting, Ann Arbor, Preventive Dentistry; M. L. Ward, Ann Arbor, Modern Tendencies in Bridge Work; U. G. Rickert, Ann Arbor, Some Phases of Root-Canal Work; W. A. Giffen, Detroit, Standardized Technic in Denture Construction; Don. M. Graham, Detroit, Local Anesthesia for Dental and Oral Surgery; Forrest H. Orton, St. Paul, Minn., Emphasizing the Importance of Theory as Applied to the Subject of Crown and Bridgework.

**PROGRESSIVE CLINICS**

U. G. Rickert, Ann Arbor, Some phases of Root-Canal Work; W. A. Cook, Ann Arbor, Some Anatomical Considerations in Relation to Conductive Anesthesia; W. J. Whiteman, Detroit, Electrolytic Medication; W. A. Giffen, Detroit, Correction of Malformed Edentulous Arches and Malocclusion in Artificial Dentures; W. J. Meier, Detroit, Using Artificial Roots for Working Models in the Construction of Jacket Crowns, Gold Inlays and Bridgework; Forrest H. Orton, St. Paul, Minn., Types of Fixed and Removable Bridgework, also an Indirect Method of Making a Banded Crown for Vital Teeth and a Safe Method of Making Three-quarter Veneer Abutments on Vital Teeth for Young Patients, i. e., where the pulp has not receded appreciably.

Demonstration of Amalgam Technic by the Dental Staff of the Board of Health of Detroit, E. O. Gillespie, D.D.S., Director.

Officers elected for the year: President ex-officio, C. J. Lyons, Ann Arbor; president, G. F. Burke, Detroit; president-elect, Clare G. Bates, Durand; vice-president, R. W. Bunting, Ann Arbor; secretary, Claude S. Larned, Battle Creek; treasurer, E. J. Chamberlin, Grand Rapids.

New members of the executive council: T. D. Dow, Stanton; A. J. Hall, Ann Arbor.

Clinic Clubs are being formed in each District Society. Same are to receive assistance from the Clinic Club of Detroit and the State Society. These District Clinic Clubs will give the clinic at the annual meeting which will be held in Detroit, April, 1920.

*Campaign on this year for new members.*

Slogan: "1,000 Members in Good Standing."



## TEXT OF THE NEW TEXAS DENTAL LAW

The Bill to be entitled: "An Act To Regulate the Practice of Dentistry or Dental Surgery in the State of Texas," providing for the examination and registration of persons desiring to practice dentistry and dental surgery, and the issuance of license therefor, prescribing the qualifications of the Board of Examiners, prescribing fees that may be charged for registration, making it unlawful for any person not licensed under the provisions of this Act to practice dentistry, defining a reputable dental college or school, providing for registration of persons who have been engaged in the practice of dentistry in other states, for the revocation of license granted by the Board of Examiners upon satisfactory evidence of misconduct on the part of the licensee, for the exhibition of his or her license by persons engaged in the practice of dentistry, prohibiting any person from advertising or soliciting business under any other than his or her proper and legal name, prescribing the fees to be charged by the Board of Examiners for examination fees, penalties for the violation of any of the provisions of this Act, and repealing all laws, or parts of laws, in conflict with this Act.

Be it enacted by the Legislature of the State of Texas:

Section 1. It shall be unlawful for any person to practice or offer, or attempt to practice dentistry or dental surgery in the State of Texas, without first having obtained a license from the State Board of Dental Examiners, as provided for in this Act; provided that physicians and surgeons may, in the regular practice of their profession, extract teeth or make application for the relief of pain, and provided further that nothing in this Act shall apply to any person legally engaged in the practice of dentistry in the State of Texas at the time of the passage of this Act, except as hereinafter provided.

Section 2. It shall be unlawful for any person or persons to extract teeth or perform any other operation pertaining to dentistry or dental surgery, for pay (or for the purpose of advertising, exhibiting or selling any medicine or instrument), unless such person or persons shall first have complied with the provisions of this Act.

Section 3. A Board of Examiners, consisting of six practicing dentists of acknowledged ability as such, is hereby created, and shall have authority to examine all persons making application for license to practice dentistry in Texas, and to issue license to any person in the practice of dentistry or dental surgery in the State of Texas; provided such applicant shall be not less than twenty-one years of age, and shall have complied with all the requirements of this Act, and shall have passed a satisfactory examination before such Board.

Section 4. The members of the said Board shall be appointed by the Governor of the State of Texas, and shall serve two years, except that the members of the Board first appointed shall be made as follows:

Three for one year and three for two years respectively, after which each member shall be appointed for two years; and until his successor is duly appointed. In case of a vacancy occurring in said Board by resignation, removal from the state or by death or otherwise, such vacancy may be filled for its unexpired term by the Governor; provided, however, that no person shall be eligible to appointment on the Board unless he has been actively engaged in the legal practice of dentistry in the State of Texas for a period of not less than three years next preceding his appointment.

Section 5. Before entering upon the duties of his office, each and every member of the Board shall make oath before any officer authorized to administer oaths, and who shall be empowered to use a seal of office, that he will faithfully and impartially discharge the duties incumbent upon him to the best of his ability; said oath of office shall be filed with the County Clerk of the county in which affiant resides, and the Clerk of said county shall duly record the same on the records of his office, and shall receive a fee of fifty cents for said service.

Section 6. Said Board shall keep a record, in which shall be registered the name and residence or place of business of all persons authorized under this Act to practice dentistry or dental surgery in this state. It shall elect one of its members president and one secretary, and it shall meet at least twice in each year, and as much oftener and at such times and places as may be necessary. A majority of the members of said Board shall constitute a quorum, and the proceedings thereof shall be open to the public. Provided further that said Board shall examine and grade all papers submitted by applicants for license and report thereon to such applicant or applicants within thirty days from the time of meeting of said Board.

Section 7. Any person desiring to commence the practice of dentistry or dental surgery, within the State of Texas, after the passage of this Act, shall before commencing such practice, make application to said Board, and upon payment of \$25.00, which shall not be returned to said applicant, and upon presentation of satisfactory evidence of his or her good moral character, and upon presentation of a diploma from a reputable dental college, and upon undergoing a satisfactory examination before said Board, on all the subjects pertaining to dentistry, or upon such subjects as the Board may in its judgment deem necessary, and having complied with all other requirements of this Act, shall be granted a license to practice dentistry or dental surgery in the State of Texas; provided that any person upon presentation of satisfactory evidence before the Board that he or she has been regularly engaged in the legal practice of dentistry in any state in the United States, for a



period of three years next preceding said application, and upon complying with other requirements of this Act, shall be entitled to an examination without the presentation of a diploma; provided further that such colleges shall be considered reputable within the meaning of this Act, whose entrance requirements and courses of instruction are as high as those adopted by the better class of dental colleges of the United States; and provided that the Board appointed under this Act shall be the final judges of a reputable dental college.

Section 8. Any person who has heretofore been licensed, authorized, or granted permission to practice dentistry or dental surgery under the laws of this state, and who has so practiced under said license, authorization or permit, previous to the passage of this Act, and who desires to obtain a license of authority from the Board created under this Act, upon presentation and surrender to the Board of said license, authorization or permit, and an affidavit that he is the same person to whom same was originally granted, shall be granted a license under this Act, for which the Board shall receive a fee of \$1.00. Provided, however, that no person shall be required to surrender an old license for a new one except he so desires. Provided, also, that if any license issued under this or any previous Act, in Texas, shall be lost or destroyed, the holder of said license may present his application to the Board for a duplicate license, together with his affidavit that the old license has been so lost or destroyed, and upon further affidavit that he is the same person to whom said license was issued, shall be granted a license under this Act. Provided that if the records of said Board fail to show that such person has ever been granted a license, the Board may have the power to exercise its discretion in granting such duplicate license, and for each duplicate license granted the Board shall receive a fee of \$1.00.

Section 9. Every person to whom license is issued by the Board of Examiners, shall, before beginning the practice of dentistry in this state, present the same to the County Clerk of the county in which he or she resides or expects to practice; who shall officially record said license in a book provided for that purpose, and said clerk shall receive a fee of fifty cents for each license so recorded.

Section 10. It shall be the duty of any member of the Board of Examiners under this Act, when it shall be made to appear to said member by satisfactory evidence from a credible witness that any person who has been granted a license to practice dentistry or dental surgery in this state has been convicted of a felony, or has been guilty of any fraudulent or dishonorable conduct or malpractice, or any deception, or misrepresentation of facts for the purpose of soliciting or obtaining business, to report the same to the county or district attorney of said county, whose duty it shall be, if in his judgment the evidence is sufficient, to file a complaint in the District Court of said county, requiring the person so accused to appear before said court, at a regular term of said court, and

upon the trial of said cause, if the defendant is found guilty of said charge, it shall be the duty of said District Court to revoke the license of said defendant, provided no one shall be required to stand trial, unless a copy of said charges shall have been furnished him or her at least ten days before said trial; and provided further that he shall be cited to appear under the same rules as govern other civil cases in said court. And if any person whose license has been revoked under this section shall practice or attempt to practice dentistry or dental surgery, after such a license has been revoked, he or she shall be punished as provided in Section 14 of this Act.

Section 11. Any person authorized to practice dentistry or dental surgery, in this state, either under this Act or any previous Act of any legislature of Texas, shall place his or her license on exhibition in his or her office where said license shall be in plain view of patients, and any person who shall do any operation in the mouth of a patient, or treat any lesions of the mouth or teeth, without having said license exhibited in his or her office in plain view, shall be deemed guilty of a misdemeanor, and upon conviction thereof shall be punished as provided in Section 14 of this Act; and each day so engaged shall constitute a separate offense; provided that nothing in this Act shall apply to students of a reputable dental college, who perform their operations without remuneration except for actual cost of materials, in the presence of, and under the direct personal supervision of a demonstrator or teacher, who has complied with the provisions of this Act, or has been legally authorized to practice dentistry in Texas under some other Act of the Legislature of Texas. Provided further that nothing in this Act shall apply to persons doing laboratory work on inert matter only.

Section 12. Any person who has been granted a license to practice dentistry or dental surgery, in this state, who shall advertise or solicit business under any *nom de plume*, or corporation name, or any other than his or her proper and legal name, shall be guilty of a misdemeanor, and upon conviction thereof shall be punished as provided in Section 14 of this Act; and each day so engaged shall constitute a separate offense. Provided further that any person or persons now practicing dentistry or dental surgery under a *nom de plume* or corporate name, may use his or their personal name as successor to the name now used, for a period of two years from the time of the passage of this Act, at the expiration of which time, the use of all such *nom de plume* or corporate names shall be discontinued.

Section 13. Each member of the Board of Examiners shall receive for his services \$5.00 per day for each day actually engaged in the duties of his office, together with all legitimate expenses incurred in the performance of such duties. Provided that all expenses of said Board shall be paid from money received by the Board from applicants, as provided for in this Act, and no money shall ever be paid to any member of the



Board from any fund in the State Treasury. Provided further that any excess money remaining in the hands of the Board, after all expenses in the performance of their duty have been paid, shall be kept in the hands of the secretary for the proper enforcement of this Act, and for other legitimate expenses of the Board. The secretary shall be required to give bond payable to the Board in such sum as the Board may require for the faithful performance of his duty in the safe keeping of and proper delivery of said money.

Section 14. Any person who shall violate any provision of this Act shall be deemed guilty of a misdemeanor, and upon conviction thereof, shall be fined in any sum, not less than five (\$5.00) dollars nor more than one hundred (\$100.00) dollars, or by confinement in the county jail of the county in which said conviction is had for any period of time, not to exceed six (6) months, or by both such fine and imprisonment, for each offense; and it shall be the duty of the county or district attorney of any county of which any provision of this Act may be violated to cause complaint to be filed against such person so offending, and to prosecute the same.

Section 15. All fines collected under the provisions of this Act shall be turned into the common school fund of the county in which said fine is collected, and no part of such fine shall be collected or used by the Board of Examiners.

Section 16. Should any section, or any part of this Act, be declared unconstitutional, it shall not affect any other part of this Act.

Section 17. That all laws, and parts of laws, in conflict herewith, be and the same are hereby repealed.

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### Removing Plaster from Vulcanite Dentures

The dental laboratory worker sometimes finds, on removing a plate from the flask after vulcanization, that the mold or model plaster has formed a hard and strongly adherent layer of crystals on the surface of the vulcanite. Prevention is, of course, better than cure, and one ought not to be so careless as to leave the flask in water for some hours after vulcanization. In cases where one can afford to wait for the gradual action of a slow solvent, the following method will be found very satisfactory: The well-washed plate should be immersed in a strong or saturated solution of sodium hyposulphite—photographers' "hypo"—and left in this solution overnight. On removal from the solution, it will be found that, in many instances the incrustation has been entirely dissolved. Should some crystals remain on the plate, they no longer adhere closely, and they can be readily brushed away, leaving the vulcanite surface quite clean.—*Oral Health*.

# OBITUARY

## DOCTOR E. P. JONES.

The Richland-Ashland Counties Dental Society was represented in the great world war by four of its members: Major Guy P. Bannister, Captain Earl P. Jones and Lieut. Fred O. Eckstein, of Mansfield and Lieut. Leo J. Subler, of Shelby. Captain Jones was the only one of the four who was sent to France, and on March 3rd, 1919, made the supreme sacrifice of his life, dying of bronchial pneumonia.

Captain Jones was a member of the First Presbyterian Church and of the various Masonic bodies at Mansfield; also Mansfield Lodge of Elks. Memorial services were held on March 30, by the church and on April 8, by Mansfield Commandery Knights Templars for Captain Jones.

At the meeting of the Richland-Ashland Society, held April 3rd, resolutions on his death were adopted.

The following, relative to the death of Captain Jones is from the *Mansfield News*:

"Captain Earl P. Jones, who was with the dental reserve corps, attached to the 16th U. S. railway engineers, died in a hospital in France of bronchial pneumonia, on March 3, according to a telegram received from the war department at Washington, D. C., by his father, James P. Jones.

"First among the Mansfield dentists who responded to the call for service at the outbreak of the war, Captain Jones saw much active service overseas. In a letter recently received by his father, he stated that his regiment had been ordered home and he had expected to sail with them, when he was transferred to another unit, because of the urgent need for officers of the dental corps.

"Captain Jones was a native of Mansfield and thirty-six years of age. He was a graduate of the Mansfield high school, and then studied dentistry in the dental department of Western Reserve University, in Cleveland, from which he was graduated. He had practiced his profession in Cleveland for two years before returning to Mansfield.

"So far as is known, Captain Jones is the first commissioned officer from Mansfield who has made the supreme sacrifice in the service overseas.

"He was affiliated with various Masonic bodies of Mansfield, and a member of Mansfield Commandery, No. 21, Knights Templars. He was also a member of Mansfield Lodge of Elks, one of the seventy men



of that lodge who went into service and the only one of them whose death has come during service.

"Besides his father, he is survived by his uncle and aunt."

It was Dr. Jones' regiment of engineers that was surprised by the germans at Cambrai and which so successfully repulsed the Germans.

#### RESOLUTIONS ON THE DEATH OF CAPT. EARL P. JONES

The Richland-Ashland Counties Dental Society has again been called upon by our Heavenly Father to part with another of our members to go to Him on high; this time it being our beloved brother Earl P. Jones, who entered the service of his country in the war with Germany, July 3, 1917, as first lieutenant, was sent to France and promoted to the rank of captain.

Captain Jones was a faithful and beloved member of the Richland-Ashland Counties Dental Society and carried out his faithfulness in the army of the United States in the cause of liberty. Early in 1919, he contracted pneumonia and answered the final summons on March 3, 1919.

It was with deep regret that the members of the society learned of his passing away in the foreign land, far from his home and friends, in the prime of life and amid prospects of a great future.

*Therefore Be It Resolved*, That this society extend to his bereaved father the deepest and most sincere sympathy, and every member in that, his deep hour of sorrow; and hope that he may find comfort in the realization that Dr. Earl P. Jones has passed from this life of sorrow and tribulations into the eternal life which is free from the troubles and tribulations, and hope that we may all so live that we may see him again in that better land.

*And Be It Further Resolved*, That these resolutions be spread upon the minutes of this society and that a copy be sent to his bereaved father.

Adopted April 3, 1919.

JOHN H. BRISTOR, *Cor. Secy.*

As for separators, medium separation is all that is necessary, and there is only one separator, and you haven't got it—the Perry Universal Separator. The Perry Universal Separator takes hold of the teeth and pulls them apart; it does not wedge them apart and wedge the gum at the same time, as the horse killers do.

—A. E. Websler, *Dominion Dental Journal*.

#### Vulcanite Repair Aid

Chloroform is not easily obtained these days and it should not be used if some other agent will do as well. I have found that carbon tetrachlorid will cleanse the several parts entering into the repair as thoroughly as chloroform. Carbon tetra-chlorid is a good solvent for dental rubber; such a solution makes a fine paste for painting the edges to which the new part is to adhere. By a thorough cleansing with this liquid and then painting with this paste will enable us to make a much stronger repair.—F. W. F., *Pacific Dental Gazette*.

# REGULAR CONTRIBUTIONS

## THE DENTAL SUMMARY

THE MAGAZINE THAT HELPS

Vol. XXXIX

June, 1919

No. 6

### THE RETENTION OF FULL UPPER AND LOWER DENTURES\*

BY RUSSELL W. TENCH, D.D.S., NEW YORK, N. Y.

A MAJORITY of our profession look upon the problem of constructing full upper and lower dentures which will prove efficient, comfortable and satisfactory to their patients, as most vexatious. That this is so must be attributed largely to the fact that but few operators have a proper conception of the factors that govern the success or failure of their prosthetic efforts; many go about their work blindly, trusting largely to luck and the laboratory to rescue them from a bad situation, hoping that time and a kind Providence may come to the rescue by adapting the patient's mouth to their dentures, knowing that, after a time, becoming wearied, many patients will endure anything. Efficiency often is totally ignored. The easy way is followed and sometimes achieves an apparent success.

It takes but very little more time in the aggregate to construct wonderfully efficient dentures, that may be worn without soreness or discomfort to the patient immediately, or within two weeks after they are adjusted to the mouth, than it takes to travel the usual road of hasty, imperfect methods, dissatisfaction, complaints and adjustments to the point where the patient is said to be satisfied or, more aptly, resigned to fate.

The difference between dentures that satisfy and the other kind may all be summed up in the phrase, "knowledge skillfully applied." To possess knowledge requires patient, thoughtful study. To acquire any degree of skill requires that the operator be willing to practice, to try and to try again and again, patiently, and with the exercise of the faculties of self-control and reason, till the problem involved is mastered. It is useless to try to do a thing that cannot be done; to waste effort. But that which is being done by many can be done again by anyone who

\*Presented at Ohio State Dental Society, December, 1918.



has the will, desire, inspiration, or whatever you may choose to call it, to keep everlastingly at a thing till he learns to do it.

I make these assertions because I know that a small proportion of the dental profession attempt to excuse themselves from performing the best service for their patients by saying that the patient will not pay for the highest type of denture service; that the time required to become reasonably proficient in the methods that are being advocated for the construction of the highest type of denture is too great; they cannot afford it. Why, bless you! The reason they cannot afford it is because they won't try it. For myself there is no satisfaction in trying to do anything but the best that is possible for any patient, and I cannot bring myself to sympathize with those who would adopt a quick method, or an easy method, which I know in my heart is not based on principles that will make it the ultimate, the best, when carried to completion. There can be no higher professional precept than to do unto others as you would that they should do unto you if they were the dentist.

The factors that we must understand and know before any technic of impression taking can be brought to its greatest possibilities of perfection may be resolved into two groups viz., those that tend to displace dentures and those that assist in retention. There are two groups of forces that may act on a denture, either singly or together. One group helps to hold the denture in place, and the other group tends to force it from its seat on the ridge. When the forces that seek to unseat the denture are just balanced by the forces that tend to retain the denture, the denture will "stay put." If we know what the displacing factors are and the limitations of these factors, we may manœuvre so that these forces may act only weakly on the denture or assist in retaining it. Then having a full knowledge of the retaining factors we may utilize them to the fullest, and thereby render a truly professional service to our patient which cannot help but rebound to our own benefit in lessening our worries, and in making possible a more professional remuneration.

Preparatory to taking up the study of the retention and displacement factors just mentioned, let us consider that a denture consists of two parts; one which we will call the base, and define as that portion of the upper denture that is in intimate contact with the alveolar ridge and hard palate and part of the soft palate, and that portion of the lower denture that covers the alveolar ridge. Superimposed on the base is the dental arch, which is that portion of a denture that holds the teeth and attaches them to the base.

The pressure exerted by the atmosphere in which we live is the most important single factor with which we are concerned in a study of the problem of denture retention. The retention of our denture will be good or bad in direct ratio to our utilization of this important factor. The measure in which we are able to utilize atmospheric pressure is

determined by the adaptation and extension of the base of the denture in question.

Extension, as we will consider it, deals with the area that the denture-base covers. Maximum extension is required if minimum retention is to be obtained. The larger the area that a denture can be made to cover, the greater force the atmosphere can exert on it; hence, the greater resistance it offers to displacing forces. A denture has reached the point of maximum extension when the peripheral portions of its base reach to, or in some cases very slightly beyond, the point of attachment of muscle fibres that bound it.

It is important to realize that full extension is necessary. Just at the point of muscle-attachment the oral tissues are usually somewhat soft and thick, and at this point they must be slightly compressed to form a valve that will yield to the movement of the denture without allowing air to penetrate under the base. If this rule is not followed the displacing factors usually will overbalance the retaining factors, with sad results. Very few dentures are made today which measure up to this rule. Uppers are trimmed with a pencil or a file, largely under the guidance of fancy. Lowers are made too short and too narrow.

A second point about maximum extension worthy of consideration is, that the force of mastication is distributed over a large area, and patients can employ full muscle tension when necessary to masticate hard or tough foods without discomfort.

A denture base that is intimately adapted displaces air, the weight of which exerts pressure of about fifteen pounds on every square inch of base area. The denture literally is floated into contact with the mouth tissues by the weight of the air that it displaces. Let the adaptation of the denture at its periphery be slightly imperfect, air leaks into and fills the denture till it sinks in the air as a boat filled with water sinks into the water. Under such circumstances the denture, if it is an upper, will drop; if it is a lower, it will bob around loosely in the mouth as the patient talks or eats. This illustration may seem a little academic and farfetched, but it will serve its purpose if I can convince you that it is the pressure of the atmosphere that retains dentures. No mention has been made of vacuum, which I have intentionally ignored, because dentures can be made to resist displacement to a greater degree without so-called vacuum-chambers or suction devices than is ever possible with them; also because when you use the term "suction," meaning the creation of a vacuum more or less complete, you are simply saying, in another way, the "pressure of the atmosphere." To understand the foregoing statement is to divest the problem of *retention* of some of the mystery that has for a long time surrounded it. When a vacuum-chamber or a relief is made in a denture a certain amount of air is retained under the denture, and that air, being slightly compressed as the



denture is seated, exerts its expansive pressure and has a tendency to balance the external atmospheric pressure and decrease the amount of force required to displace the denture in mastication.

I do not mean here to imply that a relief is not a good thing; it is necessary; but so-called suction-chambers are much less potent in retention than extension and adaptation. Relief often is necessary to secure adaptation. Perfect adaptation of a base, no matter of what material it is made, is largely a matter of accident if it is attained. That this is so is largely due to expansions and contractions of the materials used in constructing metal bases, and to the same phenomena in rubber or combination rubber and metal, or metal and porcelain dentures. The imperfection of materials of which denture bases may be constructed makes it very important that we use the greatest care in all stages of denture work; that we pay every attention to securing accuracy in every detail of our work to the highest degree possible.

Minute imperfections in adaptation are overcome to a great degree by saliva and the action of capillary attraction and adhesion which hold it interposed between the denture and the mucosa, in which position it acts as a seal to keep the air from penetrating under the denture. Some of us, when we have been a little too careless in our technic, have errors which even saliva will not save us from, and we resort to a thicker medium for this purpose, which has to be sifted on to the denture from a can, but which lacks the advantage that saliva possesses of being replenished automatically.

The quality of adaptation and the selection of an impression material with which to obtain the best adaptation depends very largely on the condition of the mucosa covering the ridges.

Opposed to the force of atmospheric pressure and the correlated factors that make possible the maximum degree of retention, are certain other factors arising from the force of muscular contraction. These factors may be grouped and called Displacement Factors. Their action is largely opposed to retention, and a successful denture must utilize enough of the possibilities of the retention group to offset all possible strain imposed by the displacement group, and at the same time the forces that may cause displacement must, if possible, be prevented from acting to displace the denture or be used to aid in its retention. Leverage enters largely into the consideration of this phase, and where its action is unavoidable it should be allowed to act on the upper, rather than the lower denture. In all instances leverage must be reduced to the minimum permitted by esthetics, if the greatest permanence of results is expected.

The contractile force of muscle tissue acts on the periphery of the base of both the upper and lower dentures and through the dental arch.

If the base of the denture is permitted to extend beyond the point of muscle attachment to the palatal or bucco-labial borders of the upper

mouth, a strain or pressure may be caused in a month or two or may result in the denture becoming loose. If the denture is retained in spite of this over-extension, soreness will result and trimming will be necessary.

To avoid displacing muscle-strain and soreness, the upper denture should end posteriorly at the point where the soft tissue flexes when the patient says "Ah." When the tissue covering the mouth is thick and soft, or when the anterior ridge is flabby, the upper denture may often safely terminate anywhere up to one-eighth of an inch posterior to this point of flexion.

The lower denture rests on a moving support, and the resulting muscle-pressures are much more potent in displacing it if they are not avoided. On the lingual side of the lower ridge the periphery of the lower base should rest snugly against the tissues, at or about one millimeter below the mylohyoid ridge. Impressions invariably will extend from one-eighth to a half-inch below this point and must be trimmed to the proper outline to secure the best suction. A properly-taken impression will be perfectly trimmed for the *frenum linguæ*. The buccolabial flanges will require trimming to the point where a vertical pull on the muscle of the lip or cheek will not unseat the denture.

Muscle contractions act on the dental arches through the bolus of food during mastication; and when their force is magnified by leverage due to incorrect design of the arches, the efficiency of the dentures is greatly impaired and often entirely destroyed. By setting the lower teeth directly over the lower ridge, and as close to the ridge as esthetics will permit, the stability of the lower denture is greatly increased. Taken bucco- or labio-lingually, the center of any given lower tooth should be directly above the middle line of the lower ridge. When the lower teeth are placed in this manner the tongue is allowed ample room, and the buccal and labial muscles are prevented from exerting dislodging pressure on them in either speech or mastication. The objection may be raised here that upper teeth will be set an unnecessary distance outside the ridge, due to the fact that the lower ridge usually is considerably larger than the upper. This is so, but the area of the upper affords greater possibilities for retention, and the upper denture rests on an immovable supporting member, which factors more than offset any increased leverage caused by setting the upper teeth outside of the ridge when this is necessary.

*Fig. 1* is intended to show a denture in which perfect adaptation to the mouth has been obtained, but the right flange is under-extended, leaving a space, *A*, between the top of the flange and the mucosa, *M*, into which food may crowd. The tissues at the point of termination of this flange are very thin, and slight movement of the denture will cause this flange to part contact with the thin tissues and permit air to enter. The left flange is extended too high, and the



muscle tissue underlying the mucosa is displaced upward by it with the result that there is a constant strain on the denture tending to force it out of contact with the ridge. This may cause the denture to be unserviceable from the first, or it may produce a good, staying denture at first, which becomes loose when worn for a time, if great soreness does not result as usually is the case.

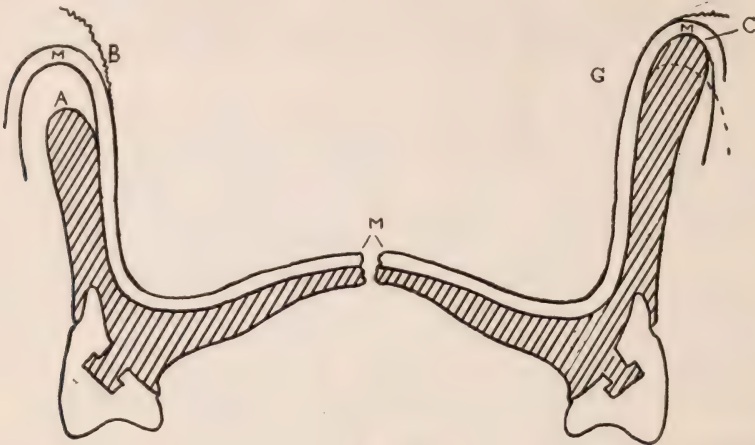


Fig. 1

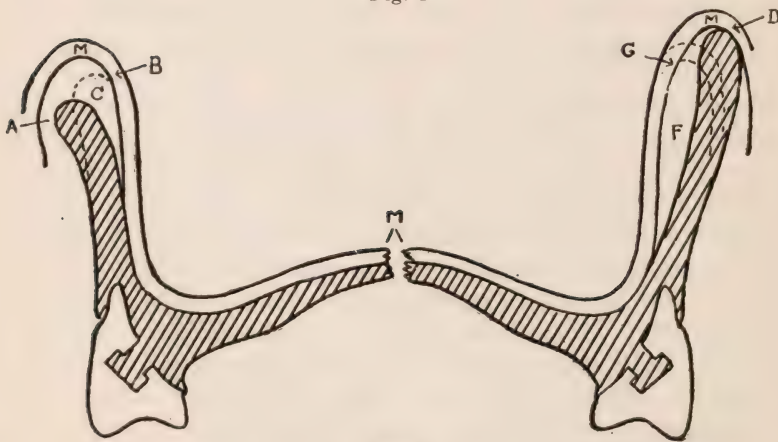


Fig. 2

*Fig. 2* shows the right buccal flange under-extended and out of adaptation with the ridge at the top. This condition usually follows the use of a large common tray, and a superabundance of impression material, which unite to stretch the fascia and muscle tissue out of normal position. A small bulk of material and a well-fitted tray would permit the dotted denture flange, *C*, to fit closely against the ridge at *B*.

The left buccal flange is shown over-extended, and out of contact with the mucosa, leaving the space, *F*. If masticating pressure is

exerted on the teeth on the right side of the mouth, this side of the denture will drop. Such a condition also permits air-leaks to develop. This form of imperfection may develop where the fascia and fleshy tissues have their point of insertion close to the ridge; and follows either an attempt to get "suction" by tracing material on the flange or failure to correctly heat to the crest of the flange in muscle trimming.

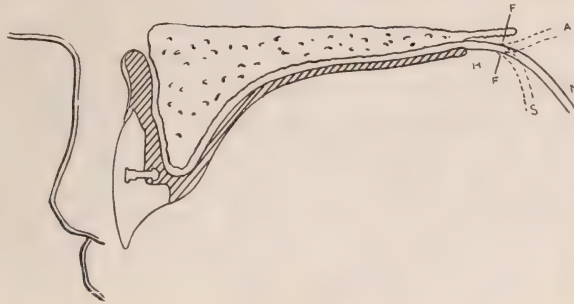


Fig. 3

*Fig. 3* is intended to illustrate under-extension of the heel of an upper denture which ends at the point *H*, upon hard unyielding tissue. From *H* to the line *FF*, there is a greater abundance of fleshy tissue under the mucosa than anterior to *H*, and when the impression or denture is correctly adapted to this area a flexible valve is formed which allows movement of the denture without permitting air to penetrate under it.

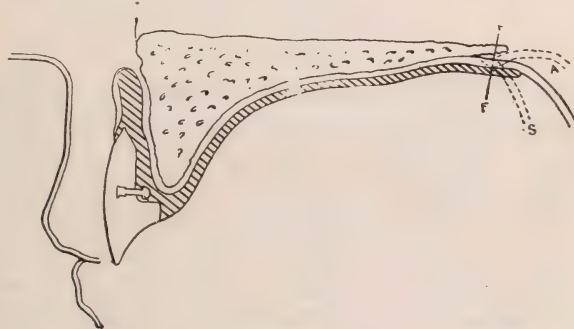


Fig. 4

*Fig. 4* shows a vertical section of an over-extended denture through the median line. The denture rests lightly against the mucosa at *FF*, instead of compressing the soft, fleshy tissue anterior to this line and between it and *H* as it should. This permits of only minimum retention by atmospheric pressure if slight movement occurs in mastication. The parallel solid lines, *N*, indicate the rest position of the mucosa of the underside of the soft palate. The dotted lines *A* show the relation of the mucosa to the over-extended heel of the denture when



the soft palate is deflected upward, as in saying "Ah," a space is then formed between the denture and soft, moving tissues, which permits air to be forced between the two and allows the denture to fall from its proper position.

The dotted lines, *S*, show the position of the mucosa and underlying muscular tissues when the act of swallowing is performed. When the heel of the denture extends this distance back on the soft palate of a normal mouth, the denture may be displaced by swallowing action, or a very sore area will develop where the heel of the denture cuts into the tensed palatal tissues. Occasionally the presence of much soft tissue in anterior portions of the vault indicates over-extension of the heel of the denture in order to secure a valve at the back that will not break when abnormal movement of the denture occurs in front of the mouth. Irritation does not develop as a result of over-extension, when the anterior part of the mouth is soft, because in such cases the heel of the denture moves with the muscle-tissue.

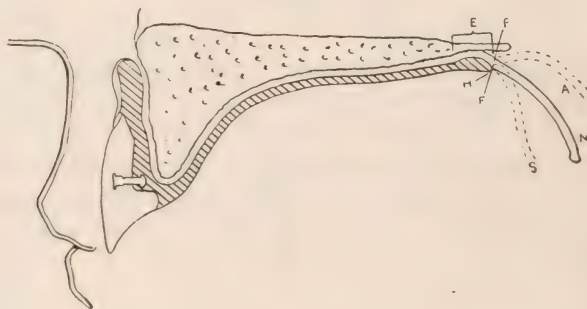


Fig. 5

*Fig. 5* shows the vertical section through a denture of proper length or extension, as well as the relation of the soft and bony tissues to the dentures. The line *FF* indicates the location at which the soft tissues of the mouth show movement when the patient swallows or says "Ah." Dentures should terminate at this point in most mouths, if maximum comfortable retention is to be secured.

The bracket *E* shows the relative extent of the non-moving compressible fleshy tissues at the median line. It will be noticed from the upward bulge of the heel of the denture that this tissue has been compressed in taking the impression. This permits considerable movement of the denture at this point without breaking contact of tissue with the denture and permitting air to enter.

*Fig. 6* shows a vertical cross-section of a properly extended lower denture and supporting alveolar ridge in the molar region. The buccal flange, *B*, does not extend onto the muscle-tissue at the external oblique line *E*. The lingual flange, *L*, ends correctly at the horizontal level of the mylohyoid ridge, *MR*.

*Fig. 7* shows the buccal flange of the lower denture, *B*, and the lingual flange, *L*, extended below the level of the external oblique line and mylohyoid ridge respectively. Over-extension of the buccal flange permits muscle-tension to unseat the denture when the mouth is opened wide. Over-extension at *L* permits displacing action of

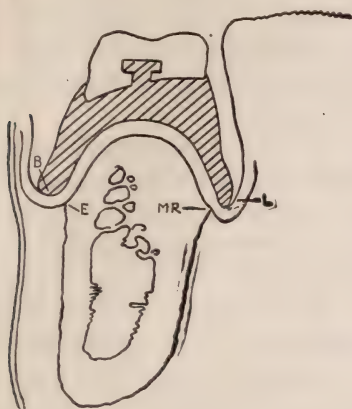


Fig. 6

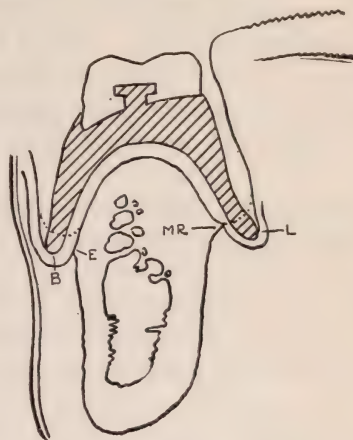


Fig. 7

muscle-tissue to occur in this region. It also permits the sharp bony spine, *MR*, to cut into the mucoperiosteum when the flange *L* is forced toward *MR* in masticating. The lingual and buccal flanges should fit tightly against the tissue supported by the alveolar bony tissue to prevent food working up under the denture.

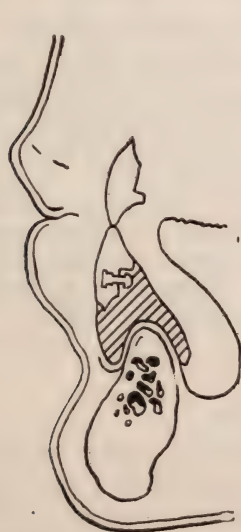


Fig. 8

Incisor tooth anterior to the ridge.

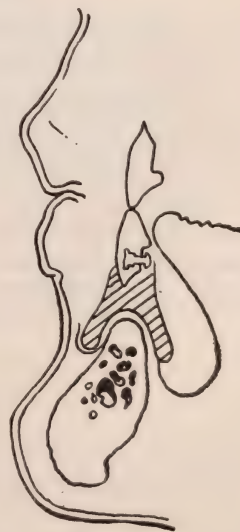


Fig. 9

Incisor tooth set above the lower ridge.



*Fig. 8* shows a lower incisor in incorrect relation to the lower ridge. If the lower incisors, bicuspid and molars are set so that they are outside of the center of the lower ridge, the displacing forces acting on the denture through the teeth during mastication, are aided by leverage and easily overbalance the retaining forces. The action of the displacing forces is magnified if the lower teeth are set too far above the ridge vertically. When lower teeth are set to the buccal or to the lingual of the center of the lower ridge, the buccal, lingual and labial groups of muscles exert pressure on the teeth during the acts of speech and mastication which tends to displace the denture.

*Fig. 9* shows the correct relation of the lower incisor to the lower ridge. Maximum stability of lower dentures is attained when the lower teeth are set so that the center of each lower tooth is vertically above the center of the base of the denture, when each tooth is set as close to the lower ridge as esthetics will permit. Leverage is thus reduced to a minimum and the tendency of muscular action to displace the denture laterally is also greatly minimized. The teeth are in a neutral position between the groups of muscles which may exert displacing force on them. Excellent results are obtained by adhering to this principle in all cases, not excepting those where prognathism or posterior malocclusion is in evidence. The upper teeth are set outside of the lower ridge necessary where these conditions are met, without any ill effect, provided the base of the upper denture exhibits proper extension and adaptation.

220 West Forty-second Street.

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### Alumni Association Northwestern University

At the Home-Coming Meeting, June 16 and 17, we are going to present the School with a bust of Dr. T. L. Gilmer, and the opportunity is given you to show your appreciation of him by subscribing to the fund.

Dr. Gilmer organized Northwestern University Dental School, in 1890, and has been in continuous service ever since. Every alumnus is under obligation to him. The bust of Dr. Gilmer is now being made by sculptor Hibbard. It is to cost \$1,000.00. Do you wish to have your name on the published list of those who appreciate the service of this man for his profession and for you? If so, send a check for from \$2.00 to \$5.00 to the undersigned. Please reply promptly.

J. P. SMITH, *Chairman*.

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### Find the Cause

Do not treat symptoms; use every improved means to discover that which is producing the symptom, and you will be in a position to apply the proper therapeutic agent in an intelligent manner.

—R. A. Albray, *New Jersey Dental Journal*.

## PARTIAL DENTURE ARTICULATION\*

BY FRANK M. WADSWORTH, D.D.S., MINNEAPOLIS, MINN.

I DEEM IT UNNECESSARY to take up your time in discussing in detail many subjects directly and indirectly associated with and having a bearing on Partial Denture Articulation, save to remind you of them, that you may, perhaps, better realize the value of the subject of this paper.

A great deal of progress has been made along the lines of impression taking, retaining appliances, direct and indirect, and attachments. The X-ray reveals the unfortunate results of past methods of root-canal treatments. The microscopic examination of extracted teeth shows us constricted and tortuous root canals often with multiple foramina.

Without question foci of infection from treated teeth are a serious menace to the public health.

These conditions render the prognosis of treated teeth unfavorable and indicate the advisability of extraction. A denture, fixed or removable follows.

Denture bases supporting but one-tenth the normal biting stress, necessitate articulation as nearly perfect as may be. These and other minor considerations all point to and emphasize not alone the value and necessity of incorporating articulation in our partial denture work, but that the day of partial dentures is but dawning.

We should, therefore, prepare and equip ourselves to accomplish the work before us with the least possible delay, using the simplest and most efficient methods and instruments, that our patients may receive the services they so much need, and that we as a profession may reap a financial reward commensurate with the better services we are enabled to render.

The paper which I have the honor of presenting for your consideration today describes a very simple method of obtaining well-nigh perfect articulation of partial dentures, fixed or removable outside of the mouth.

*Articulation* (a definition): Teeth are articulated when they are so formed as to most nearly approximate the natural organs and arranged to obtain maximum efficiency during the masticating movements.

*Occlusion* (a definition): Teeth may be said to occlude when they are arranged for the opening and closing movements only.

The results obtained when the case is articulated are several. Lateral stress on the denture tending to displacement is reduced consider-

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\*An illustrated lecture given before the Ohio State Dental Society, Dec, 1918.



ably. The stress on the natural teeth clasped also is reduced, adding years of life and comfort to those teeth. The stress being evenly distributed on the denture bases allows of far greater power being exerted during the act of mastication, consequently a better preparation of food results. Failure of bridge abutments from pathology of the roots and surrounding tissues is reduced from estimated 95 per cent. to almost nothing, thereby adding years of life to the restoration.

(A word about the financial side.) Since we can accurately reproduce on this instrument the individual masticating movements peculiar to the patient, time after time without variation, all the long, tedious, income hours, if you please, necessarily spent at the chair by the operator and in the chair by the patient, if he or she must be the articulator, may be saved to both. The patient saves his or her valuable time, carfare, etc., and receives the best articulating service for which he or she is more than willing to pay. The operator using non-income hours to render this service, still gets his fee commensurate with the service rendered, selling the saved income hours to someone else at his regular fee.

In fact the perfection of articulation is limited only by the desire of the operator. I say "desire of the operator" because unusual ability is not required to accomplish results with this instrument. These and other desirable results are all accomplished with a minimum amount of time expended by the patient and the operator.

I want to impress upon you again and again the importance of *Articulation* in all denture work. This was brought out very forcibly at the last National meeting. Practically all of the papers in the Prosthetic and Crown and Bridge sections laid great stress upon this particular point. To the best of my recollection not one of the essayists suggested a way of getting these very desirable results outside of the mouth.

In talking with a number of crown and bridge and prosthetic specialists, I discovered that to obtain articulation they one and all used the patient as an articulator.

The primary reason for this is that heretofore there never has been an articulator designed that was equipped with a device that could be so adjusted that the definite masticating movements of the mandible, found to be peculiar to the individual, could be reproduced time after time without variation.

Obtaining articulation in the mouth has many disadvantages. It is difficult in many cases to teach the patient to make the masticating movements repeatedly and at the same time correctly; and, where porcelain restorations are made the wax base which softens more or less at body temperature, makes retaining the teeth in proper position while testing and grinding almost impossible.

The greatest disadvantage from the standpoint of the patient is not the resultant soreness of lips, mouth and jaws, but the large number of

income hours the operator must necessarily use and the consequent large fee that must be paid.

It has been my aim throughout these experiments to develop a simple device that would accurately measure the inclination of the articulating planes of the natural teeth and definitely reproduce the individual masticating movements peculiar to the patient and which might, when locked in these positions be used as a guide in grinding the restoration to articulation. How well I have succeeded in obtaining the several results mentioned you will judge for yourself.

The operation of the instrument which I am about to describe and illustrate is very simple and easily mastered and will enable the operator to give real articulation with a minimum amount of time and effort expended; consequently for a fee the average patient can afford to pay.

There are three essential ideas that I wish you to bear in mind during the explanation of the operation of this instrument.

*First*, I believe all prosthetists agree that the inclination of the cusp planes determine the condyloid paths.

*Second*, the inclination of the cusp planes of the natural teeth are seldom if ever the same on both sides of the mouth, with a corresponding difference in the condyle paths.

*Third*, that this instrument provides a means whereby the movements of the mandible in each and every individual case can be definitely and accurately transferred from the mouth to the articulator. In other words, we have an instrument which permits the operator to build a denture to fit the patient and does not require the patient to adapt himself to the denture.

*Description of Articulator:* Condyle paths are curved parallel to curve of spee.

*Condyle Adjusting Screws:* To maintain the case in any desired position other than that of rest.

Thumb-plates are especially advantageous in combination with the condyle adjusting screws for grinding the case with carborundum powder after vulcanization. The condyle on one side is gradually moved from rest to protrusive position, then back to rest, moving the case laterally by means of the thumb-plate on the opposite side. The same procedure is then carried out on the then opposite side. This forms a set of articulating planes which accommodate any lateral or protrusive position the patient may desire to use.

The incisor guide-pin unit is adjustable vertically for the bite or the unit may be removed without changing the bite adjustment.

Guide plane unit-guide planes, right and left, adjustable independently of one another, rotating about a dead center at which the planes join and on which the point of the incisor pin rests in rest position.

The graduated scale enables one to determine the angle at which either or both guide planes are set—that one may know to a degree the



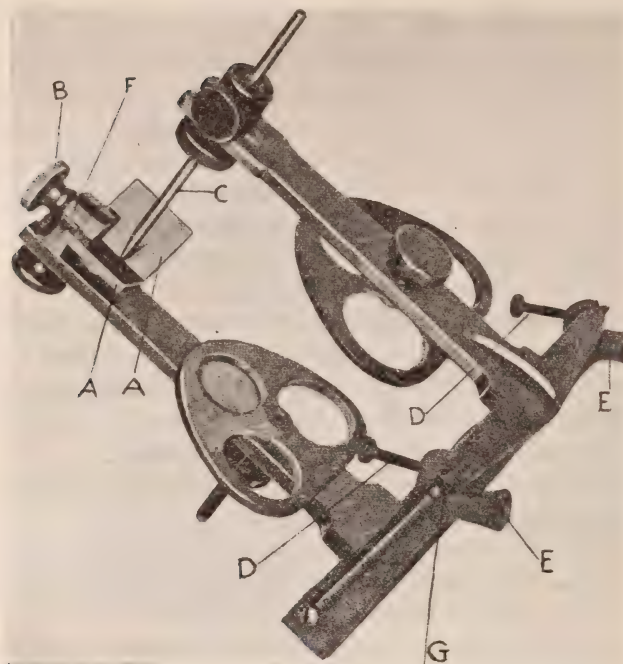


Fig. 1

Fig. 1—The Instrument: AA, Anterior Guide Planes adjustable independently of one another; B, Lock Nut of Guide Planes; C, Incisor Guide Pin; D, Condyle Adjusting Screws; EE, Condyle Paths. Curved parallel to "curve of spee." F, Graduated Scale; G, Thumb Plates.

N.B. Simplicity the keynote. The guide plane unit may be removed from instrument without changing adjustment of planes. The guide pin unit also may be removed without changing bite opening.



Fig. 2

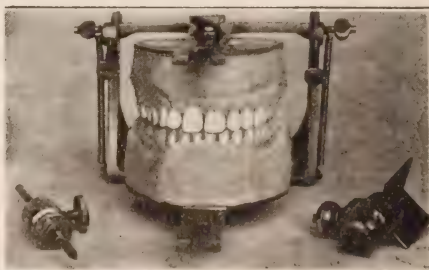


Fig. 3

Fig. 2—This and the following illustrations will demonstrate the correctness of the principles incorporated in this instrument. The patient with teeth in rest position.

Fig. 3—Casts mounted on the articulator in rest position.

angle of the articulating plane of the natural teeth or tooth and a record made thereof for future reference.

The lock nut locks the guide planes in any desired position.

*Mounting partial dentures:* My experience leads me to believe that the use of the face-bow in transferring the case from the mouth to the articulator is absolutely necessary.

The bite plates are sealed together, face-bow adjusted, removed, and the casts set in.

The incisor guide planes are removed from the articulator and the casts attached in the usual manner.

The incisor guide pin and the guide planes are now replaced in the bows of the instrument, the incisor guide pin raised and the guide planes set in a horizontal position.



Fig. 5

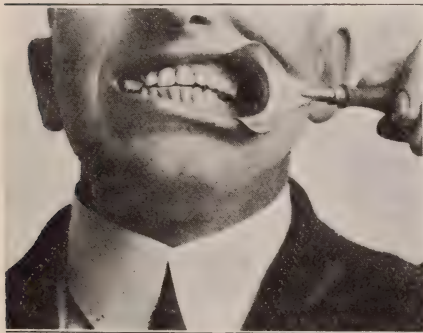


Fig. 4

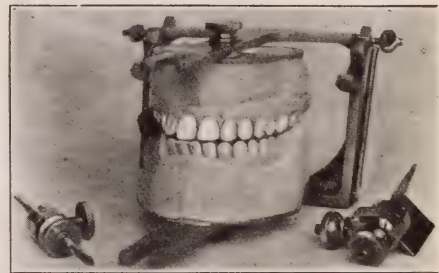


Fig. 6

Fig. 4—Lateral Bite in modeling compound, made by patient.

Fig. 5—Mounted casts placed in modeling compound bite, made by patient in Fig. 4.

Fig. 6—Case held in lateral position by condyle adjusting screws; bite removed. Note relationship of upper and lower in these three illustrations.

The incisor guide pin is lowered until it rests upon the guide planes along the center line and the set screw tightened.

The bite plates are unsealed and removed.

The guide planes are released and the condyle adjusting screw on the right side turned to the right, the case assuming a lateral position.

The cusp planes of the natural teeth pass one another at a certain definite angle and this is the angle we want to register. Before the teeth are out of contact, the lateral movement is stopped and the guide plane on that side adjusted to the incisor guide pin.

A notation of the degree of this angle is made, and the case returned to the rest position.



The same procedure is then carried out on the opposite side and the guide planes locked in the indicated positions.

The bite is now opened one-tenth of a millimeter and we are ready to grind.

Opening the bite this distance prevents destruction of the natural cusp planes and will allow the case to settle in the mouth.

A fairly long porcelain tooth is selected for the case and the cusp planes ground to correspond with the angles of the guide planes which are set to the angles of the natural teeth.

Full uppers against natural lowers: a good impression of the natural teeth should be taken and a true cast poured.

A trial bite-plate fitted and the bite obtained.

The face-bow should be used to transfer the case from the mouth to the articulator.

A 10-gauge wire, one inch in length, is bent in the form of a V and inserted in the occlusal plane of the wax bite-plate, so that the apex of the wire will rest in the sulci of one of the lower molars.

The incisor guide pin is now adjusted to the guide planes which are set in a horizontal position.

The condyle adjusting screw on one side is turned to the right, the case assuming a lateral position.

The incisor guide pin will be raised according to the degree of inclination of the cusp plane of the natural teeth.

The guide plane on that side is adjusted to the incisor guide pin and the inclination noted.

The case is returned to the rest position and the same procedure then carried out on the opposite side and the guide planes locked in the indicated positions.

That portion of the wax ridge from the median line to the first bicuspid and from the occlusal plane to the high-lip line is cut out and the condyle adjusting screw is turned to the right, the case assuming a lateral position.

The central, lateral and cuspid are now set end to end with the natural teeth. The same procedure is then carried out in the opposite lateral position.

Setting the six anterior teeth in this manner results in three very necessary things, two of which are done without conscious effort.

Not only are these teeth in the only antero-posterior position at which maximum efficiency can be expected but also are established in the only over-bite possible in the given case and the slight irregularity of incisal line is desirable for esthetic reasons.

The time is coming when no patient should or will become edentulous except upon the advice of the dentist. This will enable the prostho-

dontist to measure the nature cusp planes and build the dentures on these angles.

*Full dentures:* That the face-bow is necessary in mounting partial cases, I have proven to my own satisfaction. I therefore assume that it is equally necessary in full denture work, always providing one wishes to approximate the ideal of nature.

The incisor guide-pin and the guide planes are removed from the bows of the instrument and the case mounted in the usual manner. The guide planes may be set at any angle desired.

In the average case on this instrument the guide planes are set to the long lines of the graduated scale or twenty degrees.

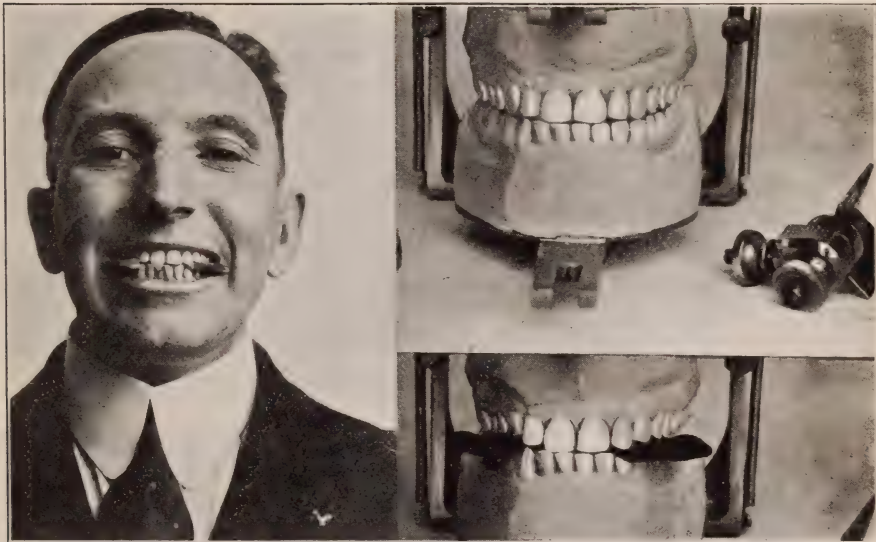


Fig. 7

Figs. 8 and 9

Fig. 7—Lateral Bite opposite side. N.B.—Space between upper centrals and lowers.

Fig. 8—Lateral Bite opposite side. N.B.—Relationship of uppers and lowers. Compare with preceding illustrations.

Fig. 9—Lateral Bite opposite side. Case held in lateral position by means of condyle adjusting screws. N. B.—Relationship of uppers and lowers.

This is an average determined by measuring the natural cusp planes of a number of patients of from forty to fifty-five years of age.

When a patient presents with a few teeth that must be extracted and full dentures made, impressions of the case are taken, casts poured, bite plates made and the case mounted.

A record of the inclination of the cusp planes of these natural teeth is made on the patient's chart.

The teeth are then extracted and the patient dismissed. When the patient returns for dentures, the guide planes are set to the charted



angles of the natural teeth and the restoration ground to these angles.

As we have made an accurate record of the inclination of the cusp planes of the natural teeth and as the condyle paths are established by these, it follows that there will be no necessity of the condyles adapting themselves to new paths.

*Crown and bridge work:* The technic for crown and bridge work varies but little from that of partial dentures and is easily developed by the individual.

While this instrument was originally designed to allow the operator to obtain maximum articulation in all abnormal cases, we find after some experience, that should one find a normal occlusion on one side of the mouth and desire to restore the abnormal side to correspond with the normal side this may be done with ease.

Since the angle at which the guide planes are set determine a certain definite occlusal plane, compensating curve or curve of Spee it necessarily follows that if the guide plane on the normal side is set at 30 degrees (the compensating curve at that side being considered normal), then to obtain the normal on the opposite side, it necessitates the guide plane on that opposite side to be set at 30 degrees also.

The inclination of the natural cusp planes on the normal side are registered. Then the guide plane on the opposite side is set at the same degree of inclination.

By placing the case in a lateral position you can see just how much abnormality exists and the amount of restoration necessary.

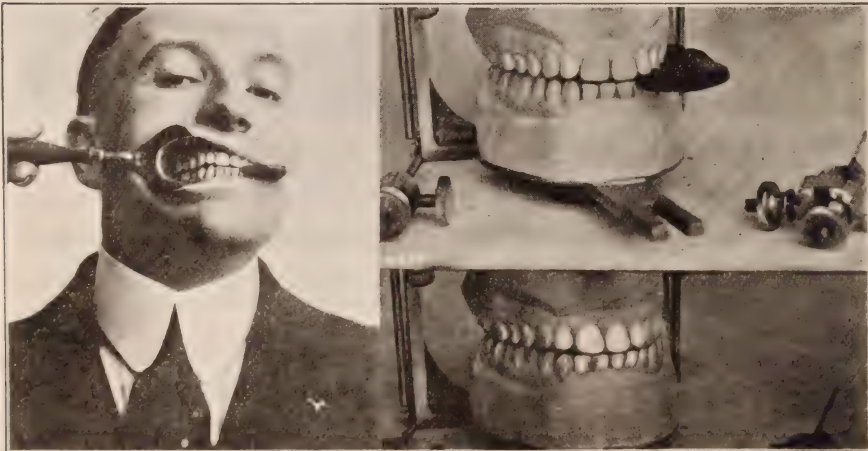


Fig. 10

Figs. 11 and 12

Fig. 10—The patient biting in modeling compound, protrusive position. Note that the centrals do not touch.

Fig. 11—Protrusive Bite—the casts held in this position by the condyle adjusting screws.

Fig. 12—The casts placed in the modeling compound bite which was made by the patient.

If you build your restorations to articulate (with the guide planes in these positions) you will restore the abnormal occlusal plane to the normal, because to articulate the restoration, you must arrange and grind the restoration on the certain occlusal plane which is determined by the angle at which the guide plane is set.

*Crown and bridge technic:* Prepare abutments, take impression of abutments, make up amalgam casts, make impressions of full upper and full lower, set amalgam casts in these impressions and pour full casts, take bite and transfer case to the articulator with the face-bow.

The inclination of the articulating planes is registered and the guide planes locked in position. A matrix is placed around one abutment, trimmed to allow the case to be moved laterally. The opposing teeth are oiled and inlay wax melted in a spoon-spatula and poured over the abutment.

When wax has congealed but not hardened, the case is moved laterally by means of thumb-plates—the oiled surfaces of the opposing teeth will cut articulating planes in the wax—the wax is carved to desired contour excepting articulating planes.

The same technic is then applied to the other abutments and the bridge span, if same is to be cast. If porcelain span is to be used the abutment pieces are cast and castings set on amalgam abutments, porcelain dummies selected, and ground as for partial dentures.

The longest way around is the shortest way home.

I consider it advisable therefore, to set the castings on the natural teeth abutments and take another impression—not necessarily of the whole mouth, however, only of the abutments and the opposing teeth. This may be mounted on a crown and bridge articulator and the case assembled and soldered.

We use the Supplee bridge bite-plates and S. S. W. impression tray, compound, for this part of the work.

518 Syndicate Bldg.

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### Carbolic Acid

Carbolic acid, or phenol, which belongs to the series of carbon compounds known as the aromatic group, is an established means of causing the death of bacteria. It is not very efficient, spores subjected to its action remaining alive. But the addition of common salt greatly increases the efficiency of its action.—*Alex. Livingston, Dental Record.*

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### Polishing Wheels

Wheels cut from three-sixteenth-inch thick rubber belting are the most efficient carriers of pumice in dressing down and removing scratches from rubber plates and gold crowns—the layer of cotton fiber holds the pumice while the rubber layer rubs it in.—*Dental Facts.*



## DEAD TEETH

BY JOSEF NOVITZKY, D.D.S., SAN FRANCISCO, CALIF.

AT THE PRESENT TIME the main problem of dentistry is that of septic teeth and jaws. But many physicians and very many dentists still disregard the teeth as possible sources of dangerous infections. Physicians still tend to leave everything regarding the teeth in the hands of dentists. The average dental practitioner knows practically nothing of pathology. In dental colleges he has been taught much concerning septic conditions in teeth and jaws that is radically wrong. On this wrong foundation he has built up a series of erroneous treatments. Competent oral diagnosticians are rare. It is not strange then, that physicians and dentists have remained blind to the fact that after skillful treatment by the average dental practitioner there may remain in and about a tooth, infection sufficient to result in a focal area with eventual serious consequences to the entire body.

Careful pathological examinations of hundreds of devitalized teeth, extending over a period of several years, have convinced me that all devitalized teeth are dead and subject to the laws of putrefaction and infection.\* For, of the hundreds of devitalized teeth which I have examined, there was not a single one which, six months after devitalization, did not show unmistakable evidence of infection.

This finding, which has been given wide publicity, has not been accepted by many leaders of the dental profession. Such leaders have opposed and even derided it. They have maintained that a devitalized tooth may be retained in the jaw and filled aseptically with practically no danger of post-operative periapical infection. They have held that their view could be established as a fact by Roentgen-ray examinations and cultural tests. But their argument has remained one of theory, although the question is one of fact capable of being proved or disproved by examination, test, and experiment.

A great body of opinion maintains that a tooth may remain uninfected after devitalization. But this is maintained by nothing more substantial than mere opinion. Roentgen-ray examinations and cultural tests have not been offered in evidence. In place of sound evidence there have been put forward statements like the following: "The commonly noted persistence of sensitiveness of root-canal dentin after thorough pulp removal, suggests a cemental source of vitality, independent of the pulp."<sup>1</sup> It is true that such sensitiveness might suggest

\*The work is now being carried on in the laboratories of Surgical Pathology at the Leland Stanford, Jr., University Medical College.

<sup>1</sup> *Journal National Dental Association*, August 1918. Page 782.

a cemental source of vitality, but a simple investigation would prove the error of the suggestion. The sensitive region is apical. This may be proved by amputating the root end, for when the root end is amputated the sensitiveness disappears. The pressure of air through the root end during canal instrumentation, as dentists generally know, affects the sensitive nerve tissue below the root.

Nowhere have I been able to find a statement to the effect that any *one* properly-conducted cultural test, six months after tooth pulp devitalization, did actually establish a lack of infection as a fact. The presence or absence of a septic area is hardly a thing to be determined as a matter of opinion. Nor is it a thing to be decided, as some men would have it decided, by a formal scholastic debate.

Most physicians and dentists are willing to grant that when a tooth is absolutely dead, it cannot be retained permanently sterile in the mouth. Many of them hold that a tooth is not dead when it is devitalized. They take "devitalize" not in the dictionary sense of "to take away life or life-sustaining qualities from," but in the technical sense of "to remove the tooth pulp." This removal of tooth pulp or devitalization, they claim, does not cause a tooth to become dead. They insist that a pulpless tooth may retain vitality, receive nourishment, and be capable of growth. On the truth or untruth of this claim depends the answer to the question of whether a devitalized tooth can be retained in a permanently sterile condition in the mouth. And the truth or untruth of the claim must be determined not by the conflicting statements of dental histologists cited as authorities, not by theories, not by opinions, but by scientific facts established by first-hand observation and experiment.

In order to establish scientifically the view that a devitalized tooth cannot be retained in the mouth without infection, we must prove that a pulpless tooth does not retain vitality, that it can receive no nourishment, and that it is incapable of growth—in other words, that it is dead.

When the dental pulp has been removed and the apical foramen closed, the tooth could receive the nourishment necessary for vitality and growth only by means of or through the cementum surrounding the root.

That a devitalized tooth does receive nourishment is supported by no sound evidence. The only argument in favor of the view is purely an argument from authority. A typical statement is that of Dr. Grieves:

"While there has been no proven communication through the first cemental lamina which is quite dense, the nearest vital cells, the cementoblasts in the second lamina, suggest from the trend of canaliculi, which is only in the direction of pulp and peridental membrane<sup>2</sup> that some osmosis of tissue juices must exist from pulp to membrane; in fact any other condition is biologically inconceivable."<sup>3</sup>

<sup>2</sup>When canaliculi are found they extend generally toward the pericemental membranes, only exceptionally toward the pulp. In all my examinations I never have observed a canaliculus extending to the pulp.

<sup>3</sup>*Journal National Dental Association*, August, 1918. Page 782.



In support of this view Dr. Grieves quotes from Hopewell-Smith, a statement of Tomes; and he indicates that leading histologists agree with Tomes. Having acknowledged in the passage quoted, the lack of proof and having presented no valid evidence, he proceeds to such positive statements as:

"Sufficient evidence has now been presented to establish, as the very first consideration, the vitality of the apical cementum which must not be destroyed in pulp devitalization."

The truth is that Hopewell-Smith "entirely disagrees" with the view of Tomes; and so do Noyes and Black. All of these men present evidence sufficient to prove that the human tooth is not kept vital by cementum. And a reading of Tomes himself, rather than a quotation in another man's book, would have disclosed statements contradicting the one which is quoted; for instance:

"Vascular canals corresponding to the Haversian canals of bone are met with but it is only in thick cementum that they exist; and, in man, perhaps in exostosis more often than in the thick healthy tissue."<sup>4</sup>

Noyes, Black, Hopewell-Smith, and others have rejected the attractive theory that a tooth receives nourishment by means of or through the cementum. They have stated repeatedly that normal cementum is structureless. But let us dismiss conflicting authorities and introduce first-hand evidence that will warrant definite conclusions.

The lack of structure in normal cementum has been shown clearly by my own laboratory investigations in surgical pathology. Specimens secured by grinding, decalcified paraffine sections for oil immersion, and decalcified celloidin sections show clearly that cementum in normal thin layers from the teeth of man is structureless. Blood vessels do not and cannot pass through it from joint to pulp or vice versa. Blood can pass from joint to pulp only by way of the apical foramen or foramina.

This is supported by the results of experiments by other men. When a fluid is sealed in the pulp chamber of an extracted tooth and the tooth is placed in another fluid, there is no trace of fluid diffusion unless the cementum is removed from the tooth. Moreover, attempts to force compressed air through the lateral root walls also failed.<sup>5</sup>

Septic dentin appears to cause an excessive deposition of cementum from the alveolus wall. Excess of cementum due to septic or other irritation is lacunated. A striking example of this is the tooth which is pictured in *Figs. 1 and 2*. I had extracted, boiled, and replanted this tooth. Two years later when it was removed by dissection, histological study of decalcified celloidin sections showed numerous lacunæ and thick layers of young cementum. All teeth, however, which bear no clinical or other evidence of inflammation show structureless cementum.

<sup>4</sup>Tomes; *Dental Anatomy*, Page 103.

<sup>5</sup>See Noyes; *Dental Histology*, Page 179.

A careful examination of the accompanying illustrations will serve to throw light on the nature of cementum and disprove the theory that "between pulp inside and periosteum outside, there is a continuous chain of living plasm."



Fig. 1

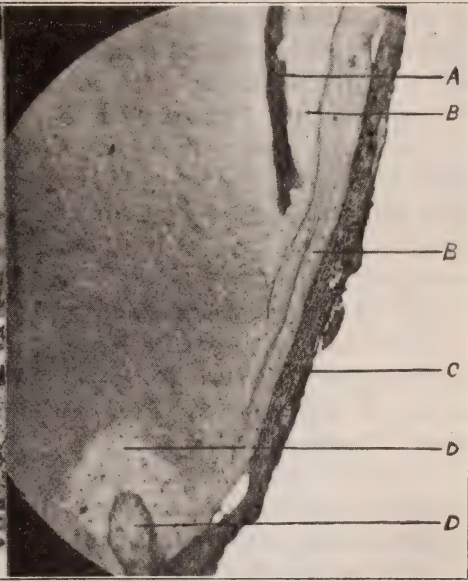


Fig. 2

Fig. 1.—Photomicrograph by Dr. F. E. Blaisdell. A section through the root of a dead tooth. A—An area of suppuration.

Fig. 2.—Photomicrograph by Dr. Blaisdell. Another section of the same tooth as in Fig. 1. A—Cementum deposited before replantation. B—Thick layers of lacunated cementum deposited after replantation. C—Fibroblasts on the edge of calcic deposits in the pericemental structure. D—An area of resorption filled in by young cementum.

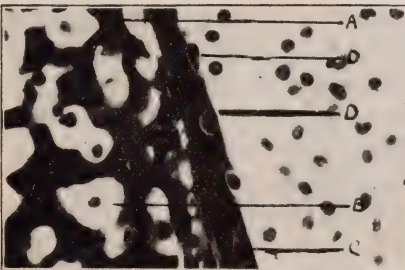


Fig. 3



Fig. 4

Fig. 3.—From the collection of Dr. F. E. Blaisdell. A—Calcified cartilaginous matrix. B—Cartilage cells. C—Periosteal bone. D—Osteoblasts.

Stain, Hemotoxylin and eosin. Obj.  $\frac{1}{2}$  in., Oc. 2 in.

Fig. 4.—The mandible of a fully-grown dog.



*Fig. 1* shows a section through the root of a tooth which had been extracted, boiled, and replanted. Two years after replantation the tooth was dissected out and found to be thoroughly septic. Granulations are partially detached from the root stump. An area of suppuration is seen at *A*.

*Fig. 2* shows a section of the same tooth with old cementum at *A*, deposited before replantation. Lacunated cementum at *B* was deposited after replantation. The layers of cementum at *B* are quite thick.

Any dormant "vitality" which this tooth might have had after it was extracted was certainly lost in the process of boiling. The boiled tooth was certainly dead. Yet this dead tooth after replantation became firm in its socket and after replantation lacunated cementum was deposited on it. Hence the fact that a pulpless tooth becomes firm in its socket cannot be taken as evidence of vitality in the tooth; nor can the fact that lacunated cementum is deposited on it.

Fibroblasts are seen clustered on the edge of calcic deposits in the pericemental structure *C*. Some of the fibroblasts appear to be submerged in the calcified tissue. *D* is an area of resorption filled in by young cementum.

There is a common notion among dentists that the "reattachment of Sharpey's fibres to cementum depends on scaling or curetting away the cementum until fresh cement corpuscles are exposed." There is a common notion that there are "vital root apices" after the tooth pulp has been removed. In this connection we should emphasize the fact that lacunæ are spaces containing osteoblasts which have become bone corpuscles and as such have lost their power of proliferation. They no longer play a part in the regeneration of bone. Bone regeneration must come from osteofibroblasts, which are young osteoblasts.<sup>6</sup>

*Fig. 3* shows osteoblasts as they are in relation to newly-formed bone and free on account of an artifact. When these cells become buried they become end products and they no longer have any genetic function.

*Fig. 4* shows the mandible of a fully grown dog killed under chloroform. The common carotid artery was exposed by dissection and followed up. The internal carotid and all branches of the external carotid, with the exception of the internal maxillary, were ligated. A hemostat was applied to the internal maxillary beyond the point where the inferior dental was given off from it. After the artery had been washed out with saline solution, mercury was run into the common carotid. The mandible was disarticulated. This work was undertaken in order to give to the busy practitioner ocular evidence that blood supply enters a tooth only by way of the apical foramen.

The roentgenogram shows the inferior dental artery, the mental and muscular branches, and some of the arterioles leading to the teeth.

<sup>6</sup>See Mallory; *Principles of Pathologic Histology*, pp. 65-75.

*Fig. 5*, a diagram drawing by Dr. F. E. Blaisdell, of an actual specimen made by pancreatic digestion, shows the inner surface of the left half of the mandible of a male fetus. It indicates the course of the inferior dental artery and shows anastomosing arteries entering the bone at the inner surface of the mandible. These twigs were from the lingual or mylohyoid. They are found as a rule in the young mandible, and some of the twigs have been seen entering the bone in dissections on the adult cadáver.

Under the supervision of Dr. Blaisdell, the left common carotid and its subdivisions were exposed by dissection. All branches except the facial and the internal maxillary were ligated. A canula was inserted in the common carotid artery. After the blood had been washed out



*Fig. 5.*—Drawing by Dr. Blaisdell. Diagram of the inner surface of the left half of the mandible of a human fetus.

with normal salt solution, alcohol, followed by acetone, was injected. Celluloid dissolved in acetone and colored with Chinese vermilion, was then injected.

On the right side the same technic was followed. Then a strong cord was tied around the neck and the head was severed below the cord.

In an aqueous solution of sodium bicarbonate and pancreatic ferment the flesh was fully removed from the head by digestion. This exposed the bones and the celluloid which had set inside the arterial walls. The specimen showed a very abundant arterial anastomosis at the mental foramen and also at the genial tubercles. Arteries were observed leading into the maxillary bones before the specimen was removed from the jar. During removal from the jar these fragile filaments were broken.

In conclusion, we must acknowledge that there is not a continuous chain of plasm between pulp and pericemental structure. All evidence goes to prove the lack of such a chain. Not one bit of evidence has been introduced in support of it.

But even were we to grant, for the sake of argument, that there may be a continuous chain of plasm between pulp and pericemental structure, would it not seem strange to insist that the chain remains undisturbed when the pulp is removed and the place of the pulp has been taken by a rubber stopping? When the plasm could no longer circulate in the pulp chamber, how could the chain be maintained? We might



just as well maintain that the circulation of the blood would continue in a man whose aorta had been replaced by a solid rubber cylinder.

If the opinion that plasm circulates from the pulp chamber through the cementum walls were based on fact, the fact would be a very emphatic reason why pulpless teeth should be removed from the body. For, in this case, drainage from the septic dentin would proceed not only through the apical foramen but also through the imaginary lacunæ and their still more imaginary Haversian systems.

Hopelessly misleading are many statements about the vitality of devitalized teeth. We might just as well talk about the life of lifeless things. Violently harmful have been the various methods of filling dead teeth. Instead of recognizing the impossibility of the retention of dead teeth uninfected in the jaws, dentists have gone so far as to suggest a standardization of the method of doing the impossible—of filling dead teeth so that they will not be subject to infection. Is it not imperative that, before standardizing a wrong treatment, dentists should seek one bit of evidence to prove that devitalized teeth are not dead?

Such a bit of evidence has been requested repeatedly during the past few years. There has been no reply. There has been offered no valid evidence of the vitality of devitalized teeth or of the permanent immunity of such teeth to infection.

Can anyone point to a single tooth which six months after devitalization did not show traces of infection? No one tooth has been cited as an exception to the rule drawn as a conclusion from the examination and cultures of hundreds of devitalized teeth—the rule that all devitalized teeth are dead, and, six months after the time of devitalization, infected.

Head Building.

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### To Remove Broken Broach

Occasionally a broach or a Gates Glidden drill may be broken in the root canal and it is impossible to move it. It can easily be removed by using a saturated solution of trichlorid of iodine, applying it for 10 to 15 minutes. This enters into some combination with the steel and it is removed in a scaly condition. This preparation is used by Rhein, of New York—not that he breaks broaches, but in his X-ray examination of teeth he often comes across them. In using it in anterior teeth there is the discoloration to consider, and these teeth would most probably require a porcelain crown. Dr. Hopewell Smith claims that a broken broach in a root canal will cause resorption of the root, so we can't consider a little discoloration.—*John Menzies, Commonwealth Dental Review.*

## BAD TEETH AND THEIR EFFECT ON THE LABORING MAN'S EFFICIENCY

BY CARL E. SMITH, D.D.S., AKRON, OHIO

DENTAL CLINICIAN OF THE B. F. GOODRICH CO.

**E**FFICIENCY from a health standpoint is difficult to determine. We know, for instance, that if the water supply of a community is pure, the community is saved economic loss from typhoid; the same can be said of the milk supply and of all the precautions necessary to keep a community in health.

This is true from a dental standpoint. If we teach a large body of people mouth hygiene we cannot say how much better their health will be, or how much we have saved them through the prevention of mouth and systemic diseases.

In the past sixteen months I have made thirty thousand mouth examinations, for seventeen thousand Americans and thirteen thousand foreigners.\* Of this number, 96 per cent. are in need of dental service; only 4 per cent. have clean, healthy mouths; 9 per cent. are without cavities and could be made healthy by a thorough cleaning; the balance have all the pathologic conditions known to dentistry, pyorrhea pockets, decayed and abscessed teeth, mucous plaques with all the virulent bacteria ready to cause disease the moment there is a lowering of the resistance. The danger from a dirty mouth is quite generally recognized, practically all contagious diseases being transmitted by the nose or mouth and the mouth is the more dangerous of the two. In a mouth free from caries, but with deposits of calculi and mucous plaques, gingivitis develops, and because the gums are painful and bleed the man gives up mastication, and food passes to the stomach carrying pathogenic organisms. The stomach cannot do double duty and in time disease results. And so by teaching oral hygiene to the laboring man and he in turn carrying the idea to his family, we are cutting down disease, not only in the factory, but in the community.

Suppose an epidemic of scarlet fever breaks out in a city. The health authorities find these cases along a certain milk route, and they look up the farms on which this milk is produced and find a case of scarlet fever. I never have heard a satisfactory explanation of how that first case started, apparently spontaneously. Could it not be a case of lowered vital resistance from some cause and a dirty mouth in which the germs of scarlet fever predominate? Whether this be true or

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\*We have given up examination of new employes, for we found that where they disregarded our advice and then had tooth trouble they would not come back to the clinic for fear of getting the "we told you so."



not, the teaching of oral hygiene to the laboring man is important if it does nothing more than prevent caries, pyorrhea, and other mouth diseases.

Now in thirty thousand mouths we find about sixty thousand cavities, and I intend to show what one cavity means to the average laboring man. First, there is the slight opening of the interdental space; food packs into the space, irritating the gum. Quite naturally he gives up mastication on that side of the mouth; caries progresses until the pulp is exposed, the tooth aches, and he goes home from work, often purchasing a bottle of whiskey on the way. I have had cases in which the patients have admitted spending their last cent for whisky and had to borrow money to go to the dentist.

The pulp in the tooth may die in twenty-four hours, or it may stop aching, only to start again in a few days. If the pulp dies, in a period of time we have the acute alveolar abscess and at last in desperation he goes to the dentist and has the tooth extracted. During this period of time, due to disuse, quantities of filth have collected over the other teeth on that side of the mouth, caries has started in the tooth next to the one extracted, and within a few months he again goes through with the same experience. By this time the other teeth have become decalcified, and within a comparatively short time he loses every tooth on that side of the mouth, and it is easy to understand this man could not be marked 100 per cent. in efficiency during this period. If we admit the teeth to be necessary to mastication and digestion, we know that the employee cannot enjoy the good health he would have had, had we been able to prevent that first cavity or at least to persuade him to have dental service before it was too late.

In thirty thousand mouths we find about eighteen thousand extractions necessary, and experience shows these teeth to be practically all abscessed. This is a difficult problem in efficiency, especially so if the findings of the research commission of the National Dental Association in regard to the relation of infections of the mouth to general systemic disorders prove only part truth, but the indications are at the present time that these apparently unimportant foci of infection are the cause of many disorders.

The average dentist knows little at the present time regarding the effect of these foci of infection. If it is arthritis, stomach ulcer, heart lesions, pernicious anemia or any of the nervous diseases of a neuralgic type, the medical man is consulted. If it is true that these foci of infection are causing these obscure diseases, it is time for the dentist to learn more of medicine, so that he may hold intelligent consultation with the physician, and the physician should seek the consultation of intelligent dentists. One case along this line I wish to report. After working for the company for six years this man laid off in November,

1913, to have a mastoid operation. In July, 1915, he applied for re-employment. Physical examination showed ankylosis of the knee and poor physical condition. The mouth examination showed a very bad case of pyorrhea and several abscessed teeth. His mouth may not have been the cause of his trouble, but the surgeon overlooked the possible cause, and the patient should have been sent to a dentist. Had this been done, he might at this time be an efficient workman. On the other hand, there are no doubt a good many of your patients whom you are burying on account of poor dentistry.

I wish to report a case which to my mind shows how bacteria are carried by the blood stream. A man injures a tooth in such a way as to kill the pulp. After a period of time an alveolar abscess develops. I have seen a number of these cases without a cavity in the tooth, no pyorrhea, and gums in a healthy condition. There is only one way that infection could occur. The bacteria were carried there by the blood stream from some focus of infection. If they are carried to the teeth, it follows naturally that they are carried from these blind alveolar abscesses.

If a man presents himself to our physical examiners with a suppurating toe-nail or infected finger-nail, he is promptly rejected as being unfit for employment; likewise if he has an acute alveolar abscess with a swollen jaw he is rejected until the cause has been removed and the swelling subsides; but we cannot reject these men with eighteen thousand necessary extractions, knowing or at least suspecting the effect on their efficiency; if we did, it would mean the rejection of 25 per cent. of all people applying for employment. The best we can do is to advise the removal of these teeth. In thirty thousand mouths we find forty thousand teeth extracted, and that tells its own story, the inability to properly masticate the food, and you medical men know better than I the results of improper digestion which are bound to follow.

One way we can estimate the loss of efficiency due directly to tooth-ache is by watching the piece-worker. Very often a man engaged in piece-work will say: "Doctor, this tooth has ached for a week." The loss of money to these men runs from three to seven dollars for the week. Men suffering for a day report losses of from thirty-five cents to one dollar and a half.

The following case I find is about the same as the general run:

J. W. Murray—Pay roll No. 169697—age 38. Length of service, 2 years, 2 mos. Reported to dispensary Feb. 2nd 1918. Rheumatism hip and knee. Examination of: Accessory nasal sinuses—neg. Tonsils—neg. No skin infections. Venereal disease—neg. Prostate gland—neg.

Dental examination—one molar with large blind abscess—extracted in clinic.

March 14th—Patient improved. April 1st—O. K. Loss of time



twenty-six days. Pay loss \$119.00. The company of course makes a profit on this man's time—I am unable to say just what that is—however that makes no difference, the loss is there and would have been larger had not the dental clinic been able to show this man the possibility of his trouble being caused by the tooth.

The filling of a small cavity this year saves loss of time from toothache next year; also saves loss of time from dental abscess and the forming of a possible focus of infection.

The employe ordinarily with an abscessed tooth goes home and waits until the swelling disappears, the abscess breaks—he goes to work, pus keeps discharging and is absorbed into the system. In a few weeks the sinus closes and he goes through the same thing. They often say to me, “This tooth does the same thing every winter.” The dental clinician talks him into having the tooth out, but in the absence of the clinic, he still has the same thing every winter, and a possible source of systemic disease.

An employe with ordinary toothache will get off to go to a dentist. The dentist will relieve the pain—the time loss is anywhere from two hours to a day—very few will return to work the same day.

In thirty thousand mouths we find sixty thousand cavities and eighteen thousand extractions necessary, seventy-eight thousand in all. If each one causes an average loss, through waste of time and cost of repair, of two dollars, it means a cost of one hundred and fifty-six thousand dollars. In New York City, last year sixty-seven thousand children failed to be promoted to higher grades because of absence, 80 per cent. of which can be laid to defective teeth, and it costs New York \$1,037,696 to duplicate a year's schooling to these absentees. These same children in a few years will be employed by our industrial concerns and a large percentage will fail of promotion on account of poor health due to bad mouth conditions.

What can be done by way of prevention? The first thing necessary is the co-operation of the medical man; he is the first to see the pregnant woman; he should instruct her regarding what to eat to supply the necessary mineral salts to build bone and teeth, and send her to the dentist for instruction regarding the care of her mouth. The dentist should instruct her regarding the mouth of her child when it arrives, also regarding the care of that mouth after the teeth begin to erupt. It is possible to take a child at this time and prevent the formation of cavities, and it is most important that this should be done.

We find at the present time a great many dental clinics in the public schools. This is a good work, but the child is six years of age when he starts school and a great deal of damage has already occurred, so the work of the clinics is largely reparative, but still it is not too late to teach the children oral hygiene. They should be taught how to live, which is vastly more important than certain subjects which have been a part

of the school curriculum in past years. If this were done, they would leave school and enter our industrial institutions better equipped to earn a livelihood.

During the past two years dental clinics have been established in a number of large manufacturing concerns. These clinics are operated along different lines, but all with the same general idea in view, that of co-operating with the medical departments in bringing about more satisfactory health conditions.

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## INDUSTRIAL DENTISTRY

BY H. M. BREWER, D.D.S., DAYTON, OHIO

DENTAL CLINICIAN OF THE NATIONAL CASH REGISTER CO.

**E**FFICIENCY and preparedness are the two great slogans we are learning as Americans today. The highest degree of efficiency cannot be reached without good health. Health cannot be maintained in its highest degree without good teeth. There is an old saying that an army fights on its stomach. Does not this in a sense hold true with that great army of men comprising the industries? More men were rejected for army service because of bad teeth than for any other cause. What would be the result if the same percentage of rejections be applied in the industries?

Many of the factories are now demanding a dental examination with the medical, for all who seek employment. In some factories the applicant is employed only on condition that the teeth be put in good condition within six months from the date of employment. At the end of six months the employe is recalled for another examination. If he has not met the dental requirements and cannot give a reasonable excuse for not having done so, he is immediately listed for discharge. If his excuse is reasonable the time is extended.

By direction of the last legislature, the Governor of Ohio appointed a commission to study State Health Insurance and Old Age Pensions. In their report, which recently was filed with the Governor, their recommendations covering health insurance include compulsory health insurance for all employees, premiums to be paid by employer and employees equally, the state to bear the expense of administration. If this should become a law, dental examinations in the factory would become a necessity and the field of Industrial Dentistry would expand.

The N. C. R. Company's Dental Clinic is conducted as a part of their great welfare work. The service is free to all employees and the work is done on the company's time. The work consists of examinations with chart, first aid treatments, extraction of badly-diseased teeth or roots, gum treatments, temporary fillings, prophylaxis, consultation, advice and instructions as to the proper care of the teeth and mouth. Estimates on the cost of dental work are not given and all work of a





Dental Clinic of the National Cash Register Company, Dayton, Ohio

permanent nature is referred to the ethical practitioners of the city. A record is kept of all work done in the clinic. Lectures on subjects pertaining to dentistry are given to the employees, also to the children of the employees. I find that the employees are very appreciative of this dental service and almost without exception voice their appreciation for the generosity of the company and to me for my services.

In reviewing my work of the past eight months, it has become my firm conviction that we as a profession must launch a more vigorous campaign on preventive dentistry. When I see so many young men and women who have been totally negligent of their mouths, it makes me want to see the gospel of Mouth Hygiene preached in every school-house in the land and thoroughly instilled in the mind of every child. The young employees are not alone in this omission for many of the older ones confess that they never owned a tooth brush and are paying their first visit to a dentist. It really gives me pleasure to transform these mouths, to rid them of their filth and put them in a hygienic condition. Seeing is believing, and in doing this work it is absolutely necessary to invoke the use of a large hand mirror. Show them the condition of the mouth before starting, scale and polish one side and have them compare it with the other; then show them the final results and you will have made an impression on the patient that will go a long ways toward

conversion to mouth hygiene. In the dental clinic I preach prevention, and right here let me say that the dental profession should give less time to gold crown oratory and more time to pit cavity diplomacy.

In making my examinations, I find a great number of these small cavities in the molars and bicuspid. These are marked on the chart. In many instances the employe recently has visited his dentist and had his teeth "all fixed up." Brother, did you ever receive a real surprise when you started your bur in one of these little fellows? Sure you have, and yet it is surprising to find such a large number of these cavities entirely ignored by the average dentist. In my opinion the filling of these pit cavities is a real step in preventive dentistry.

Have had a number of interesting cases in the dental clinic, one of them being an extremely bad case of focal infection. Last June an employe aged forty-four, came to the clinic for an examination. His knee joints were so stiff that he could hardly walk. He could not raise his left hand to his mouth and the right arm was also badly affected. He had been off duty for seven weeks. On examination, I found his mouth a veritable cess-pool of infection and advised extraction of his teeth, seventeen in number. He gladly consented but on account of his condition I did not deem it advisable to extract them all at one sitting. On his first visit I extracted three and at subsequent visits the remainder and at the end of two weeks he reported for duty.

The field for industrial dentistry is large and the work does not end in the factory. The messages on mouth hygiene and preventive dentistry will be carried into the home by the employe and the effect is bound to be far reaching.

The following is the N. C. R. Dental Clinic report for eight months ending January 31, 1919.

Examinations.....	735
Decayed Teeth.....	2,663
Missing Teeth.....	684
Extractions.....	817
Fillings.....	172
Prophylaxis.....	811
First Aid Treatments.....	543
Gum Treatments.....	182
Abscess Treatments.....	24
Miscellaneous.....	405
Consultation.....	118
Total.....	3,807



## THE INDUSTRIAL DENTAL DISPENSARY AS A FACTOR IN INCREASING PRODUCTION\*

BY E. L. PETTIBONE, D.D.S., CLEVELAND, OHIO

SECRETARY, THE NATIONAL ASSOCIATION OF INDUSTRIAL DENTAL SURGEONS

**I**NDUSTRY in the past fifty years, in its effort to increase production, has spent its greatest efforts in perfecting machinery and mechanical appliances and now its efforts must be extended to perfecting the human machine.

My object is to direct your attention to that most vital, but still more commonly neglected part of the human machine—the mouth. It is most important because through it must pass all the food, water and most of the air which enter the body and which are important factors in the efficiency of the human machine.

You would not care to have men working for you whom you knew ate from a garbage can, nor would you furnish them water to drink that filtered through a swill barrel, but many of them are in reality doing worse than this. Parts of the food they eat are allowed to remain in decayed, pus-infected teeth in the mouth, which becomes an ideal bacterial media, and the water they drink, which you may have spent much money to purify, is filtered through this bacteria and filth and reaches the human system in a much less pure state than if taken from a swamp. Many of you have lunchrooms for your employees. Why bother about clean food, clean dishes, etc., if the food is contaminated as soon as it enters the mouth of those whom you are trying to protect?

That bad mouth conditions do seriously hamper their efficiency I can prove to you by many cases of increased efficiency after the mouth has been put in condition. I could cite many cases from the various industries which have dental infirmaries. For example: Sadie J——, 22 years old, working in a ———— factory, made \$47.85 in September; after the establishment of a dental dispensary and she had her mouth put in satisfactory condition she made \$65.00 in July.

This, or many similar cases, would not convince you of the efficacy of a dental clinic for you might justly say: We do not make similar products, we do not employ women, we have increased our employees' wages more between September and July than the difference between \$47.85 and \$65.00; also there would always remain in your mind the doubt but that other factors had entered into the obtaining of these results. So in order to convince you, I call your attention to an experiment conducted in Cleveland—known as the Marion School experiment

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\*Read before the National Safety Council, St. Louis, September, 1918.

—which is covered in a report issued by the Cleveland Board of Education. The report states:

“A class was made up of twenty-seven children from Marion school, which is in the heart of the ghetto district of Cleveland. They were examined by Professor J. E. W. Wallin and given his indisputable scientific psychological test. They were taught to clean their teeth, how to chew their food, and were given the necessary dental treatment. This was done for ten months. In ascertaining the working efficiency of these children the following tests were prescribed: The memory test, the spontaneous association test, the addition test and, finally, the association of opposites and accuracy of perception tests. Identical tests were made before the work was started and after its completion and the later tests showed an increase in efficiency ranging from 32 per cent. to 918 per cent., an average of 98.9-10 per cent. for the class.

“Six of these children were able to do in twenty-four weeks the work usually done in thirty-eight weeks and were graduated for high school in February, instead of in June. One girl was in a weak, nervous condition and suffered from nervous headaches; she not only grew robust but the headaches entirely disappeared. One lad who was in the sixth grade in May, 1910, was graduated a year later from the eighth grade, finishing the two grades in one year. One boy made first place in the athletic meet and secured two-thirds of the points won by the school; the year previous he was unable to win one point.

“The work of this class and its effect on the rest of the school took this building out of the group of these buildings wherein the failures exceeded the extra promotions and put it in a group occupied by very few schools in the city, wherein extra promotions, those who skipped a grade, exceeded the failures.”

What did this experiment accomplish? It was the means of establishing hundreds of school dental dispensaries throughout the country, because the hardheaded old fellows on the school boards found it was cheaper to fix a child's teeth so he could study than it was to carry him over, a failure, year after year. In fact, they could fix ten children's teeth for what it costs to carry over one failure. And now the school dental dispensary is a universal thing—they are even going so far as to send dentists through the rural districts to fix up the children's teeth.

Twenty-five per cent. of the men in the factories today can have their efficiency increased by having their mouths put in good condition. How do I know? Because we examined the mouths of hundreds of the 21-31 year old men of the draft, and what did we find? Twenty per cent. of their mouths in a terrible condition—foul, neglected, nothing ever done to keep them healthy. Ten per cent. more needed fillings to keep them comfortable. So my twenty-five per cent is very conservative, because you have all the men working for you that Uncle Sam turned



down because they did not have at least twelve teeth—three in front above that struck three below and three at the back above that struck three below. In addition to these you have all the older men and, as a rule, their teeth would not be as good as those of the younger men.

There are four different kinds of industrial dental dispensaries: *First*, those wherein only examinations and prophylaxis are done; *second*, wherein examination, prophylaxis and fillings are done and a small charge made to the employes; *third*, wherein all types of dentistry are done for employes entirely at the company's expense; *fourth*, those wherein work is done only for the employe's children—this is building for the future employes. Many industrial dispensaries have been started since the war. If Uncle Sam needed dentists for his soldiers why should we not have them for our industrial army?

If a firm cannot be influenced to spend the money on a dental clinic ask the employes to vote on whether they would support a dental dispensary if installed and make it self-sustaining. The firm would be ahead then in just the time saved by employes laying off to go to dentists. In one plant the time saved from Jan. 1, 1918, to Aug. 1, 1918, by men who had work done by the dispensary was 25,300 hours. It took a minimum of four hours to get down town to a dentist and back. The minimum wage in the plant is \$1.00 per hour. If it saved the men \$25,300.00 I leave it to you to figure what it saved the firm.

I believe as Richard Feiss of the Josephs & Feiss Company does. He said, in speaking of the industrial dental dispensary: "We do not call this welfare but 'efficiency work'." A dental dispensary will cost about as much as a medical dispensary—\$1,000—and can be run for about the same amount. In other words, it will cost about as much as a cheap automobile, but will bring better results and run longer.

6503 Detroit Avenue.

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### Shell Crowns for Teeth with Short Bites—Troublesome Cases

When band is fitted, cut it down to root level, and across occlusal solder a piece of 24-k. gold; return to mouth and have patient bite to see that she can close. Take impression, contour with wax and cast with 22-k. gold, and you will have the satisfaction of knowing you have not to grind root should crown prove too high. Any error must be to occlusal of pure gold. The object in using pure gold is to have something soft which will give to opposing teeth if necessary when the patient first closes. Sufficient space must be secured between pure gold and opposing teeth to allow ample thickness of gold.

—N. W. White, *Commonwealth Dental Review*.

INDUSTRIAL DENTAL CLINICS FROM THE STANDPOINT  
OF THE INDUSTRIAL SURGEON\*

BY R. W. ELLIOTT, M.D., CLEVELAND, OHIO

INDUSTRIAL SURGEON FOR THE NATIONAL LAMP COMPANY

WHEN ASKED to make an address at this meeting, I sent letters to various industrial medical and dental infirmaries, asking the results of their observations on cases that had been referred to the dentist by the physician for advice, diagnosis or treatment. Perhaps the time was too short, but the fact that only three or four answers have been received would lead one to think that most of those engaged in this branch of industrial work have neglected the systematic study of the cases in the dispensaries that have come either for examination or treatment, and that they have thereby missed many opportunities for doing good for their employees. In the majority of infirmaries it would seem that record cards have been merely filled out, together with the total number of persons examined, treated or rejected, and that no attempt has been made to follow up the cases or to diminish the number requiring treatment by a careful study of the records and an analysis of the underlying causes responsible for the disabilities. Only occasionally has a note been made of the transfer of a case to the dental infirmary or to a hospital for treatment; rarely do we find any record of the result of such treatment appearing on the original card.

This address, then, must be regarded as a preliminary study of this important subject, and it is presented with the thought that it may stimulate a more careful survey of the field and ultimately bring about a more extensive and scientific study of individual records and a closer co-operation between surgeons, dentists and nurses.

Several years ago Sir William Hunter called attention to the extraordinary frequency with which oral sepsis is overlooked by all concerned—the patient, physician, surgeon and even the dentist. It is not my desire at this time to point out how common a cause of disease mouth infection is, how grave its effects, or how often it is lightly regarded. I shall cite, however, a few typical cases that have recently come under the observation of our physicians; these show what remarkable benefits frequently follow the removal of the sources of infection in the mouth.

The special interest of dental disease arises from this: That dental cario-necrosis is the commonest and most prevalent infection in the body and that this infection is of a “mixed” character, including not only harmless organisms, but also all the most active pathogenic organisms known to the bacteriologist.

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\*Read before the National Safety Council, St. Louis, Mo., September, 1918.



The importance of oral sepsis, or mouth infection, from an industrial standpoint has been repeatedly emphasized by numerous cases brought to our attention. These have resulted in considerable loss of time, lessened productivity, caused more or less crippling of individuals, general lowered resistance to infections and have even been the unsuspected source of persistent ill health, due to secondary infections in the heart, stomach, kidneys and joints.

A brief resume of a few typical cases encountered in either routine physical examination of employes or in the dispensary service will show the value and necessity of careful attention to the oral findings:

Four cases of diabetes, all old and valued employes, two of them in fact in positions of great responsibility, had an average of nearly 10 per cent. sugar, progressive loss of weight, and were in a greatly debilitated condition. Their mouths all showed chronic pyorrhea, alveolar abscesses and a general pus infection. The rapidity of their improvement following radical and in one case almost heroic treatment, was most startling. All four cases are now in good health, never miss a day, and three have been sugar-free for months.

Recently an employe who had grown up in her department decided to leave because of a general inflammation of nearly all the large joints—she was so crippled that she could no longer do the work assigned to her. She was referred to the factory dentist, who finally convinced her that most of her trouble was due to the septic condition of her mouth. After the removal of an old, ill-fitting bridge and the extraction of several neglected roots the joint pains disappeared and she is a cheerful and contented operator today.

One of the most striking cases encountered was that of an assistant sales manager who had lost nearly six months' time on account of such a severe case of sciatica that he had spent most of his time in bed or hobbling about on crutches. The source of his infection was located in his mouth. Following an X-ray examination seventeen teeth were removed, each with a root abscess. The sciatica has disappeared, likewise the crutches.

Three cases of high blood pressure without apparent cause cleared up when old tooth stumps were removed and cavities filled. Blood pressures of 170, 160 and 170 dropped respectively to 130, 140 and 152. Associated symptoms—headache, insomnia and dizziness—also disappeared. This had led to the practice of insisting that the blood pressure be taken in all cases examined, either in our dispensary cases or in our routine physical examination of new employes.

A foreman suffered with bloody dysentery, suppurative conjunctivitis, insomnia, and was subject to frequent fainting spells. An examination of his mouth showed pyorrhea, old stumps and loose, blackened fangs. The decayed teeth were extracted and the pyorrhea treated. He has no trouble of any kind now and works and sleeps well.

Several cases of habitual fainting spells, which had puzzled one of our doctors, cleared up promptly following the removal of infected teeth. This group of cases is of especial interest, as one of the most demoralizing accidents that ever occurs in a room full of girls is to have some one faint.

In a small group of cases a careful analysis was made of abscesses covering a period of one year. During the first six months they had no dental supervision, but during the second period they all received more or less careful prophylactic treatment. An interesting observation was made that in 25 per cent. of the cases the average saving in the actual number of days was one-third. Of course, it is impossible to draw definite conclusions as a result of our findings in such a small number of cases, covering a period of but a few months; however, they serve to emphasize the necessity of a more careful and systematic study of medical and dental cases presenting themselves in our clinics.

Another interesting group of cases was those that were referred to the medical department by the dentists. Two cases of syphilis were recently discovered by the dentist in the course of his routine examination of old employees. Both were in the secondary stage, with pronounced mouth symptoms and in a most dangerous condition with respect to the liability of infecting their fellow workmen.

Numerous cases of diseased tonsils have been first seen by the dentist. The industrial dentist should, I believe, receive special instruction in diseases of the mouth, other than those directly related to the teeth. He should have an opportunity to see, with the physician in charge, all such cases that come to the medical clinic for treatment.

We all know that such cases as the above are typical and that they could be duplicated in any of our industrial infirmaries. They cannot but make us realize that a careful examination of the mouth, gums and teeth by a competent dentist is of as much importance as the determination of the condition of the circulatory and respiratory systems or the detection of disorders of the kidneys and the digestive apparatus. Examination of the teeth should be, therefore, a part of the routine physical examination of employees and the correction of diseased conditions in the mouth, by systematic prophylactic treatment should be regarded as of the same importance as the treatment of organic disorders or the opening of an infected finger.



PROPHYLAXIS OF THE MOUTH AND TREATMENT  
OF THE GUM AND ALVEOLUS TISSUE\*

BY E. E. HAVERSTICK, D.D.S., ST. LOUIS, MO.

WHEN DR. SIMPSON asked me, a few days ago, to read a paper to the St. Louis Dental Society tonight, I hesitated; but I told him that if he would accept the responsibility of my presenting a subject having such brief time for preparation, I willingly would offer a paper, not of scientific research, but present a few of my personal observations for our consideration. I am sure that it would be most profitable to all of us to have an exchange of individual experiences.

There is no dental subject of the hour that offers so wide a field for study, research and application as "Prophylaxis of the Mouth and Treatment of the Gum and Alveolus Tissue." It is because of the feeling of apprehension that we are not always as careful with our prophylactic work as we should be that has prompted the writer to present this subject tonight.

When the Terminal Railway Association started to build a bridge across the Mississippi River it sank steel casings one hundred and thirty feet through water and quick-sand to solid rock; when the Bank of Commerce began to construct a new building on Fifth and Olive Streets, it sank steel casings sixty-two feet to solid rock; which reminds us that the great minds that manage these immense corporations realize the importance of a firm foundation upon which to build their enduring structures. "For a house built upon the sand shall not endure." Should not we of the dental profession, therefore, begin to realize also the value of the foundation upon which we are to build our structures?

We are not in exactly the same position as the engineers who begin a great structure, but rather like the sanitation officer who guards the health of his community. We have our foundation already laid and covered with a protecting tissue. It is our duty to guard the base and the tissue which protects it.

We are aware of the importance of the foundation of every edifice and the greater the value of the structure the more important is the sustaining base.

Since man is the highest expression of the will of the Maker, should we not, as guardians of the precious pillars of the gateway of the soul, lay special stress on this phase of our work which adds to the comfort and mental welfare of the community?

The repair of the superstructure seems far less significant than the prevention or elimination of disease of the supporting tissue. However

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\*Read before the St. Louis Dental Society, February 4, 1919.

it is my desire to leave the arguments of the case to the ingenuity of your own fertile minds and view the subject as "September Morn," and so I shall state the subject and give the conclusions.

What are the results which we desire in treating the gums?

The question may be answered by saying that the health and happiness of our patients is what we desire, and through their health and happiness and alertness of mind, to build up a better manhood and a better community in which to live.

In the application of principles and medical agents, the criterion is the results which are produced in the mouths of the patients. Some principles which we employ may produce good results while others may not. Some medical agents will produce desirable results while others fail. So we might say, "Is there anything new under the sun?" Perhaps not, but there are at least new combinations of old things which we may employ to an advantage in our practice.

In order to accomplish good results let us keep constantly before our minds this slogan, "Kill the mouth germs." I wish that this slogan could be put in big, broad, black letters in every newspaper, magazine, billboard, and moving picture screen throughout our broad land.

In 1917, Prof. O. T. Osborne, of Yale, told the American Medical Association that a certain public tuberculosis institution, of which he was an officer, had examined the mouths, corrected the teeth, and removed the sources of infection of every patient entering the institution.

He said: "Owing to this preventive treatment they have had less tonsillitis, fever, sore throats, less influenza and colds than they have had before they began these mouth investigations." No less an authority than the statement recently issued by Doctors Mayo, that 75 per cent. of the cases under their observation could be laid to mouth infection.

We, as members of the dental profession, know the multitude of diseases that can be traced to mouth infection, but what percentage of the laity realize that as Dr. Osborne says, "Most unexpected tolerance to pyorrhea is found."

*First*, chronic invalidism may be caused by mouth infections.

*Second*, the blood pressure may be raised or lowered.

*Third*, the thyroid gland frequently is enlarged and may hypersecrete or hyposcrete in these infections. (In other words, some cases of goiter result from neglected teeth.)

*Fourth*, serious disturbance of the blood, heart, kidneys, stomach, intestines and joints are frequent from mouth infections. Bad teeth may be the cause of Bright's disease as well as rheumatism.

*Fifth*, glycosuria and perhaps true diabetes may be caused by mouth infection.

*Sixth*, serious distant focal infection may occur.

*Seventh*, serious brain and nerve disturbances, as well as neuritis, may occur from mouth infection.



*Eighth*, ulcer of the stomach, appendicitis and chronic colitis frequently may be due to pneumococci long carried in the patient's mouth.

*Ninth*, no treatment of these conditions will be of any avail until the mouth is made clean.

This is a long list of diseases, and they vary greatly in symptoms. About the only quality that is common to the lot is the fact that the bacteria and the poisons which they produce can one or all be absorbed through the gums and the channels of decay in the teeth themselves.

Only this morning, we read of the death of Colonel Roosevelt, due indirectly to an infected tooth.

The teeth of our soldiers were the admiration of the people of Europe, but we know quite well that we kept many here whose teeth they would not have admired; and we also know that, with the proper childhood care by prophylaxis, the teeth of those who went would have been much better.

It is true that all of the germs of the mouth are not harmful germs; but they should be destroyed, nevertheless, as it would be hard to separate the harmful from the harmless.

I have suggested the slogan, "Kill the mouth germs," because the people must be educated by some expressive phrase which will attract their attention to make them appreciate the value of their teeth, and their attention should be called to the dangers which lurk in their mouths. Sometimes we can get the co-operation of a patient by a knockout remark such as, "You would not think of going down the street with your collar as soiled as your teeth." We tell our patients how they should have their gums and teeth treated, and they have confidence in us; and when they go to another dentist they tell that dentist the way they should like to have their teeth treated. Therefore, the profession controls the patient's mode of thought and in turn the patient controls the dentist's mode of operation. They learn what is good, and then demand it. If it were not for the fact that some of us gather and discuss better methods, and plead for better operations and more prophylaxis, dentistry would not have gradually raised its head to the level of other professions.

How shall we kill the germs? Shall we take them out and crack them on an anvil? That would be a sure way, but some one suggests that it is rather tedious. Would it not be better to starve them to death? Actually keep the mouth so clean that those that were not washed or scraped away with the debris, would not have food upon which to feed and would die of starvation? This is the method which we prefer to recommend. And when we have accomplished this result, our enemy, the germs, will not have even dead tissue upon which to feed.

Of course, in our cleansing process, all of the salivary calculus, serumal calculus, bacterial plaques and food debris will be scraped away,

and the roots of the teeth will be left smooth and polished. All dead and loose gum tissue will be incised and removed and these incisions in themselves will aid the tissue to build up a resistance. It is still a mystery to us, why the gum tissue over a pyorrhea pocket will so quickly resume a healthy state and the suppuration cease, when the loose part of the gum is incised and removed and the root scaled and polished. Is it that the wound itself, in the tissue, calls to its aid an army of germ destroyers and tissue builders from the body's reserve? Whatever the cause, the clinical results bear out the truth of the statement.

What shall we do with the infection that is hidden in the little inaccessible recesses and in the tissue itself? For this, I will give a formula for an alternate application of a solution made of

2 drahms tincture iodine.

12 to 20 grains tannic acid.

1 ounce glycerine.

1 ounce water.

for the first application, and for the second application tincture iodine and tincture aconite equal parts.

These applications may be made alternately, every other day in the beginning, and the time of application gradually lengthened to once each week until all congestion has disappeared. I cannot recommend too strongly the wonderfully beneficial effect of these formulas.

Glycerine soothes the wounded tissue and acts as a food which is absorbed, tannic acid is an astringent and a disinfectant and tincture iodine, moderated with these or with aconite, is the most effective disinfectant which can be applied to the mucous membrane without injury of the tissue. As far as I know, the first formula never before has been recommended for the treatment of gingivitis or pyorrhea. The other one has been in use and gone out of usage and come back again, which is a good recommendation. The first formula should not only be applied to the gums on a pellet of cotton but should be injected under the free margin of the gums and into the pyorrhea pockets with a syringe.

Cases have come under my observation where the gums have receded to the bifurcation of the roots of molar teeth, for instance, with pyorrhea pockets extending two-thirds of the way to the end of the roots, and pus exuding in great quantities, that have yielded to the treatment which is given above, and the gums have become healthy and with proper prophylaxis remained so.

It should be borne in mind that one scaling and one prophylactic treatment is not all that will be needed, but the teeth should be kept clean and should have a prophylactic treatment each time medical applications are made.

In a prophylactic treatment, the use of a disclosing solution before the treatment shows where the polishing is most needed, and afterwards it shows whether the operation has been thoroughly performed above



the gum margin. It is important that the plaques and infectious material be removed thoroughly from the surfaces of the crowns of the teeth, that it may not be forced under the free margins of the gum by the food in the process of mastication. But another, and perhaps more important part of a prophylactic treatment, is the thorough and careful removal with suitable instruments of all tartar and all foreign substances from beneath the gum margin. For the manner of doing this work and the instruments required, I probably can do no better than to recommend to you the paper of Dr. Alfred C. Fones, which appeared in the *Journal of the N. D. A.*, February, 1918, and which you no doubt have read.

However, I have a set of instruments which I use in my work, perhaps because I have become accustomed to them, and which have given me very satisfactory results. Of this set, seven are used almost exclusively and the other ones only occasionally.

Many instruments, much show.

Few instruments, much work.

I would disagree with Dr. Fones circular method of brushing the teeth. If you were to brush a piece of pleated cloth, you would brush backward and forward along the pleats and not with a circular motion; so in the same way, you should brush the buccal and labial surfaces of the teeth with an up and down motion, with the long axis of the teeth, except the third molar, where the motion should be across the tooth. The palatal and lingual surfaces cannot be reached so easily, and the best motion is across the long axis of these surfaces of the teeth. All angles of the mouth are triangles if you will complete the front of the figure.

In the process of brushing the teeth, all of the muscles about the mouth should be relaxed; and while the labial and buccal surfaces are being brushed the mouth should be almost closed; but, while the occlusal, lingual and palatal surfaces are being brushed, the mouth should be held wide open. The space to use a tooth brush between the teeth and lip and in the region of the first bicuspid, both above and below, is wide, and narrows down to a point in the region of the third molar. The same is true on the lingual surfaces; therefore, the brush should have short bristles graduated from the handle to the point of the brush.

The best tooth cleanser is muscle—yes, our muscle, and the patient's muscle. The patient may use almost any dentifrice except the ones in which the manufacturer has substituted liquid sugar for glycerine, if he will use a sufficient amount of muscle. In fact, clear water with plenty of muscle is very cleansing.

Common table salt is very satisfactory in its cleansing properties, and a salt-cellar should be kept on every wash stand and the salt used freely as a dentifrice in washing the teeth and sprinkled on the brush

after each usage as an antiseptic. Salt stimulates the action of the glands of the mouth and prevents their becoming sluggish.

The teeth should be brushed before breakfast and after each meal and also before retiring. If an especially-prepared dentifrice is used at all, it should be at the last brushing of the day, for if there is any reason for using such a dentifrice, it is that the teeth may be cleansed more thoroughly, and since the longest period, according to our plan, at which the teeth are not cleansed, is at night, therefore they should be most perfectly cleansed on retiring.

One warning to guide our faith when we have determined to apply these suggestions in our prophylactic work. We can not cure all cases of pyorrhea. Perhaps ten per cent. of the cases which we have to treat come from tuberculosis, syphilis, etc.; and in these cases we may not be able to restore healthy gums. But will we not be delighted if we can restore nine out of ten, and relieve and retard the other ones?

For the diagnosis of pyorrhea alveolaris, I would recommend the two articles by Dr. Maurice Roy, of Paris, France, which appeared in the August and September numbers, 1918, of the *Dental Cosmos*. From the twelve conclusions of these two splendid, scientific articles, I will quote but three of them.

*Tenth*—"The normal functioning, of the teeth affected with pyorrhea is an element favorable to their organic resistance. It always should be re-established, if it has been destroyed.

*Eleventh*—"The hygiene of pyorrhetics always should be inspired by this essential principle: That the pyorrhetic pockets are formed around a tooth only when any point of the gingival neck of the tooth can not be kept in a satisfactory state of cleanliness.

*Twelfth*—"The dentist should, therefore, undertake the education of his patients, whose co-operation is indispensable in the prophylaxis of pyorrhea, and by a regular watchfulness, he should treat the slightest complications of the disease."

In treating the gum tissue it should be borne always in mind that medicaments which will destroy bacteria, may, and *most likely will*, injure if not destroy the tissue also. It may be that in some cases such a result will be desirable, as the infection would be carried away with the sloughing tissue. However, such a result would be the exception and not the rule. *The ideal effect would be produced by the use of a medicine which would stimulate the tissue to normal action and thereby throw off or overcome the infection, or one that would feed the tissue by being absorbed to restore its tone.*

We are aided greatly in keeping the teeth free from the abundant yellowish salivary calculus which redeposits so rapidly in the mouths of some patients, by having the patient take the juice of a lemon before breakfast. The lemon-juice treatment will change the salivary secretions, so that there will be less calcium in the saliva and consequently



less to deposit. Grape fruit will aid in producing the same result but perhaps not to the same degree. The lemon juice should be taken for four to six weeks.

Canker sores and other like lesions of the mucous membrane are quickly controlled by the application of a 10 per cent. solution of silver nitrate, followed immediately by an application of tincture iodine.

If you will allow me to digress from the subject of my paper for a moment, I will give an old formula for root-canal dressings which has proved to be the most effective in my treatments, and has none of the objectionable odors of some medicines.

Phenol, 2 parts.

Camphor, 2 parts.

Mix these together and add

Thymol, 1 part.

When this dressing is removed from a root canal we will not be able to detect an odor except the clean odor of camphor.

As a prophylactic treatment would not be complete without taking into consideration the esthetic aspect of the teeth, the jagged and irregular edges and surfaces should be ground as even as possible and polished.

If you never have ground off the broken and worn edges of the anterior teeth, you will be surprised how you can change the expressions of your patient by doing so.

The results thus obtained will be more appreciated by the patient than the healing of a pyorrhea pocket. For, what patients see, they know, and what they do not see they do not appreciate.

If I were to take a contract to attend to a child's teeth all through its life, for a specified sum each year, I never should allow his gums to become involved in disease, and I should fill the cavities while they are small, for such a procedure would save time.

If such a procedure would be an economy of the dentist's time then it would also be an economy of the patient's time, and establishes the rule which should be followed; to say nothing of the better teeth and healthier mouth which would result from such care.

St. Louis dentistry has not awakened to the full realization of its possibilities in preventive dental treatment. Will you help it awake? May I plead with you that our opportunity is at hand? Dentistry never before has stood on so high a pinnacle as it occupies today, but it needs every wide-awake dentist with his shoulders at the wheel. Will you lend your aid? While we have operators equal in every respect to the dentists of other large cities, we are lacking in co-operation in educating the general public in the value of good dentistry. We are proud of the fact that some of our men have been recognized in other cities; but we should not let other fields show greater inducements than we have here. We should educate our people to appreciate better dentistry,

and therefore create a field here which demands the best men in the country. Good, conscientious dentistry is one means of educating the public in prophylaxis, and publicity is another; for what is a good thing worth if no one knows about it? I should like to mention the names of men who have created specialties in St. Louis, a free dental clinic, and men who have practically no pyorrhea alveolaris even in their general practice; but we know them without my being personal. Let us co-operate and boost as other dentists do.

Prophylactic dentistry as well as reparative dentistry is not an easy profession if it is practiced conscientiously, but it will produce a satisfaction in the dentist's own heart which is his greatest reward after all, for "it is not what others think of us that counts, but what we can conscientiously think of ourselves."

Boyle and Maryland Ave.

### THE NECESSITY FOR REMOVING ALL INFECTION AND PUS CONDITIONS FROM THE MOUTH\*

BY J. S. SPURGEON, D.D.S., HILLSBORO, N. C.

**A** FEW YEARS AGO the Mayo Brothers are reported to have said that the next great advance in the science of medicine would come through the dental profession, or from a dental standpoint. This was quoted by most all the speakers and writers, and published in all the journals throughout the land.

Gentlemen, we are today living in the midst of the fulfillment of that prediction, and the indications are that we, the dentists, are now doing and will continue to do more and more to conserve the health of our people, we will do more to relieve pain and sickness than could be done from any other standpoint, we will do more to prevent all kinds of chronic and acute diseases.

When we read or hear the statement made, that arthritis, aortitis, embolism, appendicitis, the kidneys, the liver, the skin, and in fact, the serious derangement of *every organ and every tissue of the body*, may be and often is caused by infections originating in the mouth, do you understand that it is true, have you seen it demonstrated in your practice? If not, then I wish to emphasize the importance of looking for and demonstrating that these things do occur.

First, I wish to quote in full, Press Bulletin, No. 1, Series 1918:

RECORDS OF INSURANCE COMPANY SHOW THAT FIFTY-TWO  
POLICY HOLDERS DIED DURING 1917 FROM  
DENTAL DISORDERS

That death may be caused by disease of the teeth is shown in a statement just issued by the Metropolitan Life Insurance Company.

\*Read before the North Carolina State Dental Society, 1918.



During 1917 fifty-two deaths which were traceable to infections of the teeth and gums occurred among its industrial policy holders.

Diseases of the teeth cause death through the complications which set in. The tooth troubles in these fatal cases led to blood poisoning, inflammation of the membrane of the brain, inflammation of the middle ear, decay of the bones of the jaw and head, and even inflammation of the lining of the heart, as well as serious derangement of the digestive system.

#### THE DEATHS OCCURRED AT ALL PERIODS OF LIFE

Of the fifty-two deaths, seventeen, or nearly a third were of children under fifteen years of age. Twenty-one of those between fifteen and forty-five, ten between forty-five and sixty-five, while the remaining four were among policy holders over sixty-five years of age. The condition is, therefore, especially worthy of attention among school children even the very young ones.

Infection at the ends of the roots of the teeth, so-called, "blind abscesses," ulcerations, and pyorrhea or Rigg's disease, were among the conditions reported in these fatal cases.

#### CARE OF TEETH SAVES AND PROLONGS LIFE

Most of these deaths were probably preventable. If it were possible to obtain the full history of these cases, it probably would be found that lack of proper care of the teeth was the real cause of all of them.

*Second*, I wish to quote in full a copy of a death certificate on file in the office of superintendent of health of Rowan County.

#### MEDICAL CERTIFICATE OF DEATH

Date of death, January 6th, 1918.

I hereby certify, that I attended deceased from October 1st, 1917, that I last saw him alive on January 5th, 1918, and that death occurred on the date above stated, at 1:00 A.M. The cause of death was as follows: Pyorrhea Alveolaris and Embolism of brain. (Duration) four months. (Contributory) Chronic Nephritis. (Duration) one year.

(Signed) B. G. EDWARDS, M.D.

January 6th, 1918.

(Address) Landis, N. C.

*Third*, I know no better way to emphasize these things than to cite *a few* of the many interesting conditions that have come under my own observation during the past few years; however, before doing so I wish to state that in so far as this dissertation is concerned, I shall not go into the discussion of the pathology of, or of the particular organism that may cause certain diseases; however, I would recommend that you take this matter up and give it especial study, for in view of the work that is being done along this line by Dr. Rosenow and others, it is wonderfully interesting, and it probably will develop and lead to a definite course of treatment that will surpass anything that we now have at our command. It is my firm conviction that when these organisms are better under-

stood, we will be able to produce vaccines, perhaps an autogenous vaccine, that will be a specific in many of these cases, just as we now prevent diphtheria and typhoid fever by proper inoculation.

But for the present we can only confine ourselves to such treatment *as will remove and prevent the recurrence of all pus conditions and infections that may be found in the mouth.*

And in the removal and prevention of these *pus conditions*, strange, unexpected and wonderful things, often happen.

*Case 1:* Pyorrhea. Miss C., trained nurse, age about fifty. Rheumatic and stiffness of the joints, swelling of the hands and feet, vitality lowered. Six weeks after treatment all rheumatic pains and swelling had disappeared and her vitality restored to such an extent that she said she felt like returning to her work with the same enthusiasm and interest that she used to have. One of the strange things that happened in this case was that on her neck just below the collar bone was a small benign tumor, not larger than a pea with a base about one-fourth inch long, the base not larger than a knitting needle; and another on the lower limb, of the same description, but much larger. At the time she reported (six weeks later) both these tumors were gone; she did not know when or how they went. The scar had the appearance of having been skillfully removed with a knife and the roots dissected out from the base, perfectly and beautifully healed. About twelve months since the treatment and none of the symptoms have returned.

*Case 2:* Pyorrhea. Mr. L., age forty, general health good, and a very strong and active man, for fifteen years had suffered periodically with acute rheumatism, completely relieved and no return to the present time. The strange thing that happened in this case was that for two or three years the backs of his hands had become dry, hard and scaly, so that the entire surface of the back of both hands were covered with scales having the appearance of pellagra, gradually getting worse. This had gone to the extent that he refused to shake hands, and when in company would keep his hands behind him. In about two months time every appearance of these scales had disappeared, leaving no trace of what had been. No return up to the present time, two years.

*Case 3:* Pyorrhea and five abscessed teeth. Mrs. W., age about fifty-five, had worked very hard all her life, doing all of the house work, cooking and washing for her husband and three boys. A complete breakdown. Had been confined to her bed for some weeks, general debility, severe pain in lumbar region and under both shoulder blades; pain so great that she could not walk alone, and could not lie on either side. Gradual improvement, and twelve weeks after treatment she was again doing all the work, and expressed herself as feeling better than she had in five years. Three years since treatment, her health remains fairly good, and is still doing her work.



*Case 4:* Pyorrhea and two abscessed teeth. Mrs. S., age about forty-five, had been diagnosed as ovarian and uterine trouble with continual indigestion, severe pain and swimming of the head, pain in the back, in both sides and under shoulders, had not walked more than a hundred yards in five or six years, and only then with a cane or crutch. The fourth day after treatment she walked more than a mile and up a flight of steps without any aid. It is now about three years, the ovarian and stomach troubles have not cleared up, but she is much improved, and is able to do her own house work.

*Case 5:* Pyorrhea and three abscessed teeth. Mrs. M., age about fifty-six, chronic invalid, rheumatic and partial paralysis of the right arm; could not raise her right hand above the waist, and could not grasp anything with it. Six weeks after treatment the arm had a free movement, she could extend it above her head, and said she could milk a cow as good as anybody. About three years have passed, her health is fairly good, and no return of the paralysis.

*Case 6:* Pyorrhea and three abscessed teeth. Mrs. W., age about forty-five, general debility and loss of flesh, headaches, pain in the eyes, with defective vision, had been diagnosed as ovarian trouble. Treatment that she was able to get gave little or no relief. Oculist consulted, and glasses tried but they did not correct the vision or relieve the pain in the eyes. After being relieved of an acute attack of the ovarian trouble was referred to me. A few months after treatment her general health was restored, vision restored, and no need for glasses.

*Case 7:* Pyorrhea and one chronic abscess. Mr. C., age about thirty-three, Acne Rosacea, or commonly known as bumpy face, in the most exaggerated form; this condition had prevailed for years, the face being so red and covered with bumps that it was badly disfigured. A few months after the infection was removed from the mouth, all bumps and pustules disappeared, leaving the skin a normal and healthy color, with only a few slight scars. He gained thirty-five pounds in weight in a short time. Two years, no return of the symptoms and health splendid.

I will now call your attention to the necessity of curetting after extracting teeth that have had chronic abscesses of long standing.

*Case 8:* One abscessed first molar, with gold crown that had been placed there fifteen or twenty years and never had given any pain. Mrs. S., age about forty. She is a perfect type of development, and of health, but for the past few years has been threatened with a nervous collapse. She had been to the best diagnosticians in this and other states; she had spent some time in the hospital, and with other things had tried the rest treatment; apparently all that could be done gave little and temporary relief. About twelve months ago this tooth was extracted, but, we did not curet for the reason that there was no Novocain available at that time. After the extraction there was a decided improvement in her general condition and a gain in weight. About two months ago the

old symptoms began to return, nervousness and vitality lowered. At that time we found an infected area, bloody serum exuding from beside the first molar and bicuspid, which we believe to be the most virulent form of infection; this was curetted recently, and on Oct. 15, 1918, she reports a complete recovery.

*Case 9:* Granuloma involving the apices of two teeth of many years' standing. Dr. H., age forty-eight. This is the gentleman that was operated on by Dr. Silverman before the Society at our last meeting last year in Durham, and is perhaps the most interesting of all that we have; he has been a remarkably strong and healthy man with the exception of occasional sick headaches, that were very intense and lasted for twenty-four to forty-eight hours. For three or four years he frequently had called my attention to an uncomfortable feeling over these two teeth, by the side of the nose and at the infraorbital foramen, with a small ulcer of several years' standing, just inside and on the floor of the nose. This ulcer in the nose had been treated by a nose and throat specialist but it always returned. Upon examination from time to time we could see no cause for the trouble and dismissed it with the statement that it probably would not amount to anything. As time went on his general health began to decline, with loss of energy and activity, and with slight pain and swelling of the ankles. At that point we had the operation that many of you saw. In a short time the pain and swelling had disappeared from the ankles, and a remarkable improvement in general, with gain in weight and activity. There followed this, an unusual amount of hard work and mental stress, so that January 4th, of this year, he suffered a complete breakdown; he lost all interest in the affairs of life; in fact, living was a burden, and he expressed himself as not caring how soon the end might come. Diagnosis revealed pus, albumin, casts, and blood from the kidneys. Strict diet and treatment was followed with some improvement, but not at all satisfactory. At this point it was suggested that we have a picture of these teeth made. This picture showed that there was a small necrosis left in the alveolar process posterior to the roots of these teeth back of the granuloma. Another operation was performed, removing not only the necrosis as shown in the picture, but a large area surrounding it that might be infected. After this operation he gained five pounds the first seven days, and no pus, albumin, casts, or blood have been found in the urine since two weeks after the operation, with marked improvement in general health. I submitted these statements to him for correction and he asked me to say in addition to the above, that since the operation not a dose of medicine had been used, and that his general health in some respects was better than it had been for years; that for some time the skin had been dark and brown and lifeless, and that now it is clear and soft, with a healthy glow. This case like many others emphasizes the fact, that apparently the slightest and smallest infections in the mouth



may cause the greatest, most serious, and disastrous results. (Oct. 15, 1918, health still good and no return of the symptoms).

*Case 10:* Acute rheumatism. Mrs. L., age about 35. Confined to the bed for some weeks and suffered intensely. She was treated by several physicians with no relief. We had the entire mouth X-rayed and found this tooth which we extracted and curetted. The relief and improvement was very slow, but continued gradually for ten months when all the pain had disappeared, and today she walks as nimbly as when a girl. This is another case of apparently slight infection that caused serious trouble.

*Case 11:* Pyorrhea with little or no deposits on the teeth, gums swollen and badly inflamed, large quantities of bloody serum exuding from the gums and from around the teeth. Miss B., age thirty-three. The condition was so bad that she had to expectorate every few minutes during the day, and at night while asleep it was estimated that as much as a cup or more of this bloody serum would run out of the mouth; this was accompanied with sick headaches and lowered vitality to such an extent that life was a burden; three teeth were extracted, the remainder treated. A picture made twelve months later shows the results, with no return of the pus.

*Case 12:* Pyorrhea and two abscessed teeth. Mrs. R., age about thirty-two. For some years had suffered with sick headaches, and painful menstruation, staying in bed from twenty-four to thirty-six hours during each period; married for ten years, barren. Eighteen months after treatment, patient is a mother,

*Case 13:* Mr. S., age fifty-four. Pyorrhea and one abscessed tooth of long standing, loss of appetite, anemic, face drawn, lost manhood. Six weeks after treatment, "The smile that won't come off."

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### Polishing Strips

When very fine polishing strips are not to be had, take a sheet of the linen that comes between the sheets of rubber, tack or pin on a board or bench by the corners, glazed side up. Slightly wet all over, then dust a little very fine pumice powder evenly over it. When dry, remove and cut into narrow strips from one-eighth to a quarter of an inch wide and put away till wanted. Used dry, they are very effective, but useless wet. In case of emergency, a broad strip doubled, unglazed side out, vaselined, will be handy in compressing a silicate filling in the absence of celluloid.—*H. W. Wills, Commonwealth Dental Review.*

## AN INTERESTING SPECIMEN

BY EDWARD C. MILLS, D.D.S., COLUMBUS, OHIO

THE COLUMBUS DENTAL SOCIETY recently procured an unusual specimen for the dental museum, established in the Historical and Archæological Building, on the Ohio State University Campus, being the skull of Ringling Brothers' largest elephant, that died in Columbus during their exhibition here last May. It is here illustrated as mounted in the museum.

The dimensions are as follows: Lateral diameter of skull, 27 inches; apex of skull to orifice of tusk sockets, 39 inches; depth of tusk sockets, 13 inches; brain cavity, lateral diameter,  $8\frac{3}{4}$  inches; vertical  $5\frac{1}{2}$  inches, front to rear,  $10\frac{1}{2}$  inches; circumference of body of mandible, 22 inches; condyle to opposite condyle,  $17\frac{1}{4}$  inches; occlusal surfaces of lower molars,  $7\frac{3}{4}$  by  $2\frac{3}{4}$  inches; upper molars,  $8\frac{1}{2}$  by 3 inches; distance between sockets of tusks,  $8\frac{3}{4}$  inches; foramen magnum, 3 by  $3\frac{1}{2}$  inches.

According to Tomes, "The elephant has during the course of its life twenty-four molars; three milk, and three true ones on each side of mandible and upper jaw. They are not all in place nor all actually in existence at the same time. Only one whole tooth or portions of two (when the front one of the two is nearly worn out) are in use at the same time. After a tooth has been in use and worn down, a new one comes up to take its place from behind it, and absorption in the old tooth being set up, it is shed off, and the new tooth pushes forward into its place; each successive tooth being greater than its predecessor."

This elephant weighed about eight tons, was about sixty-six years old and valued at three thousand dollars. Cause of her death is unknown, except for the fact of the unusually long haul from circus cars to show grounds, parade, two performances and return haul to the cars was too exhausting, as she sank on the pavement and street car tracks where her huge form delayed car traffic for three hours. Since the death of her mate about one year ago, the circus management stated, she grieved sullenly and alone, refusing to associate with the other elephants and proving useless as a performer after her bereavement—a convincing proof that the same impulses that prevail in the human heart are felt in this species of the pachyderm.

In response to a letter of inquiry relative to the history of this elephant, the following under date of June 12, 1918, may be of interest:

"The name of this elephant was 'Jennie', but at various times she was called by other names. While with one show she was called 'Queen,' and more recently 'Big Bingo.'

Jennie was imported from Colombo, Ceylon, in 1879, together with a male mate called 'Baldie,' at that time she was about twenty-six years



old. She, together with Baldie, was purchased by Burr Robbins, who then was conducting a prominent circus with winter quarters at Janesville, Wis., remaining with this show until about 1890, when this pair of elephants was purchased by Mr. Reynolds, of Rockford, Ill., for a small circus he was operating.

During the years that Jennie was with the Burr Robbins show she was trained in various performances, presenting an act of merit with her companion Baldie. She also was trained in hauling heavy loads in



harness, and in pushing heavy wagons, in which she was especially good, owing to her immense size and strength.

In 1895, Ringling Brothers purchased Jennie and Baldie from Mr. Reynolds, and the pair have since been with Ringling Brothers. About one year ago Baldie died and since that time Jennie rapidly failed until she died at Columbus, May 17th.

Yours very truly,

CHAS. RINGLING."

Prof. Wm. C. Mills, curator of the Historical and Archæological Building is very anxious that an interesting dental museum be established in the building and will be pleased to receive any specimens, dental appliances or instruments, which will be credited to the donors.

## ORAL AND PLASTIC SURGERY\*

BY CAPT. H. O. LINEBERGER, D.R.C., BASE HOSPITAL NO. 65,  
FORT MCPHERSON, GA.

THE TERM ORAL SURGERY has become very familiar in the dental profession, but the term Oral and Plastic Surgery opens up a field much larger than that usually considered under the former class. In this paper I shall endeavor to cover very briefly the course given at Officers' School of Oral and Plastic Surgery in the city of Philadelphia.

In the first year of the war, little or no attention was paid to the restoration of a man's face, and apparently they were contented to merely remove the loose sequestrums of bone and slough tissue allowing the part to heal as best it would. In a case of a fractured mandible such an operation would end in what usually is termed a "bird-faced man." It was these, with other sad failures in oral surgery which caused the surgeon general to call in the dental surgeons to help out. The dentists have responded cheerfully, and have rendered magnificent and encouraging assistance.

When a man receives a wound in the trenches he is first dressed in a dugout by the first aid dressing station. Here the hemorrhage is arrested, foreign bodies removed; and in case of a bone fracture, relieved as best can be done in a limited time. Next, in the evacuation hospital, the wound is opened up and thoroughly dressed, but rarely ever are the severely-wounded patients operated on until they reach the base hospital.

The treatment in a base hospital is as near like civilian surgery as can be made in a war zone. The wound is thoroughly washed out with normal salt, di-chloromene-T-ether, bichlorids or some other antiseptic. In case of a fractured jaw or extensive flesh wound about the face it always is advisable to block off all nerve supply to the parts with a 2 per cent. solution of novocain before attempting operation. All slough soft tissue is removed, but care is taken to preserve all parts of bone tissue. The fractured parts are assembled as best one can, and an impression of jaw taken in plaster. The point of fracture of the jaw is noted accurately, and the secured casts broken along the same line. Assemble the fractured parts of cast to normal occlusion, and on the new models make the interdental splints. In taking the bite and in adjusting the models to the articulator it is imperative always to use the face bow in order that the teeth may properly occlude when the

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\*Read before the North Carolina State Dental Society, 1918.



splints are removed. This is especially true in case of the interdental splints where the mouth is to be held open.

In selecting just the form of splint to use, many things are to be taken into consideration. If it is a simple fracture in either the mandible or superior maxilla and the patient is to remain in the hospital for several weeks, not going to be transferred across any water where he would be liable to sea sickness, the Angle band method or the Gilmore wiring method may be used. Where the fracture is very simple and involving only one jaw the Gilmore position band splint, Hayes wiring method, Cryer's or Hullihan's swaged method or the Kingsley single-arch splint may be used. Where the patient is to be transferred to some convalescent hospital, it is best to use the form of splint whereby the jaw may be held open and the open Gumming, Dorrance or Hullihan all answer the purpose especially well.

After the splint is properly constructed, the adjusting and holding of same in place often is a perplexing problem. Most splints may be cemented in place, others just slipped over teeth, but in all cases it is best and safest to bandage the jaw up with a modified Banton bandage or by means of the adjustable Aiguris head cap.

It is always wise not to try to carry a case too fast nor to try to do all at one operation; however, after the bone has begun to knit and the soft tissue to granulate, it will be safe to do the tissue or bone graft. The most successful and popular skin graft is the pediculated flap method. Freshen edges of wound by cutting away fibrous scar tissue. Obtain flap, about one-third larger than area to be covered, from some area near wound, particular care being taken to see that the flap has an ample supply of arteries, veins and nerves, or else the flap will most surely slough. In folding flap over or suturing it down in place, do not draw it tight as the vessels may be closed or the part where sutured may slough. The area from which the flap is taken should be covered over by either undermining the tissue and drawing it together or else by use of the Thurschs graft.

The bone grafts usually are secured from either the rib or tibia. The first part of this difficult technic is to thoroughly prepare the area for the insertion of the graft, arrest all hemorrhage and see that the area is in a thoroughly aseptic condition. In securing the graft one must be careful not to handle the graft with the finger, and also that it is of the exact size needed. The graft usually is sutured in place by a cat-gut suture, held absolutely fixed for several weeks.

The modified bone and tissue graft often is made use of in a fractured mandible case. In these cases the tissue graft is secured from the neck and chest and the bone graft from the clavicle. Both tissue and bone is raised at one time and properly adjusted over the wounded area.

In all cases of oral and plastic surgery, great stress should be laid on the case of the patient's teeth and mouth while the fixed appliance

is in place. It also is imperative that the patient be given proper diet, and that at regular intervals.

After the bone and tissue grafts have thoroughly healed then comes the restorations of the parts which could not be restored by the above methods. The lost teeth and parts of jaw bones usually are restored by either fixed or removable gold or rubber appliances. Lost noses, ears, etc., are constructed to suit the individual case, and are adjusted in place by hooks, eye glasses or springs of different nature.

## PREVENTIVE DENTISTRY\*

BY GEORGE M. COOPER, M.D.

DIRECTOR BUREAU MEDICAL INSPECTION OF SCHOOLS, NORTH CAROLINA  
BOARD OF HEALTH, RALEIGH

**I**N THE BEGINNING, I want to express my appreciation of the honor conferred by the invitation to take a part in your meeting and to assure you in the outset that I have not come for the purpose of preaching to you or at you. But I come frankly and honestly to discuss a program with you, which is of vital importance to every citizen of North Carolina present and prospective, but of especial importance to the children, who after all represent our state's greatest resource. Some of you probably have wondered what I mean by the term, "Preventive Dentistry." I mean simply collective or community prophylaxis. I want to ask you to consider the matter exactly as I would ask a body of health officers to consider the prevention of typhoid fever for instance.

### NECESSITY FOR PREVENTION

It is an inviolable law of Nature that nothing ever stands still. A leaf is either growing or rotting. A plant grows or dies.

I have been telling the mothers and teachers all over North Carolina that the age to begin taking a child to a good dentist is six months. A dentist told me a few days ago I was wrong. He said that the time to begin was with the child's grandmother at six months of age. He is everlastingly right. And so I hope every dentist here will agree with me that it is time to start a systematic educational propaganda. I shall not touch the field of pathology. I am not a dentist and so would make myself ridiculous before a body of experts. One thing, however, I do want to emphasize as strongly as possible, that nine-tenths of so-called indigestion is due to imperfect teeth with the resulting tooth diseases. The teeth compose the very gateway to the alimentary tract. The mouth is the beginning of trouble.

### FREQUENCY OF DENTAL DECAY

Among the policy holders of the Metropolitan Life Insurance Company in 1917, fifty-two deaths occurred from diseases of the teeth and

\*Read before the North Carolina State Dental Society, 1918.



gums. But the most significant part of this record is that seventeen, or one-third, were of children under fifteen years of age.

Working in accordance with the law requiring a medical inspection of school children in North Carolina, the teachers made the preliminary examination for something like 175,000 school children during the last school year. Here are a few of the results taken at random: A school of twenty-three pupils in Lenoir county had nineteen children reported with decayed teeth, average age twelve years. Only two ever had consulted a dentist. In Forsyth county a school of fifty-one pupils had forty-four with decayed teeth; twenty-three of them or nearly half were twelve years old and over; 27 per cent. of them were over fourteen years of age. All permanent teeth affected. Only three of them had been to a dentist. In Guilford county the health officer examined a school and found every child in it with decayed teeth 100 per cent. bad. Every child had a permanent tooth involved. Less than 10 per cent. had visited a dentist during their lifetime. In an examination which I had made myself for one of the large cities of the state, we found 1088 children out of 1638 examined, having remediable dental defects; 325 of them being over fourteen years of age.

These figures can be duplicated in any city, town, or school district in the state.

#### PROOF THAT THIS STATE OF AFFAIRS CAN BE PREVENTED

So much for the frequency of trouble. Now, can it be remedied and prevented in the future?

A member of the executive staff of the state board of health told me recently that he took his two-year-old child to see a dentist, and the dentist refused to look in the baby's mouth, stating that it was not necessary to treat a child's teeth under fourteen years of age. I am a living example of the fact that if something is not done vigorously and persistently for about half of all children's teeth *before* fourteen few of them will have a sound tooth of their own at thirty.

Here is where the grandmother theory comes in. Numbers of people, owing to generations of bad heredity or wrong living environment, have blood and bone deficient in certain chemical elements, such as lime salts. To treat these people successfully every dentist must begin on the child soon after birth. Must have a good knowledge of physiology, chemistry and of food values; or what is better must have a physician consultant upon whom he can rely. At least two of the best dentists in North Carolina have informed me that they have the living proof that not one isolated case, but literally hundreds of them, from families of notoriously bad teeth on both sides, have been coming to them from babyhood for the past twenty years and who now have perfectly good teeth.

I know it can be done. Persistence and patience are the requisites.

## RESULTS OF NEGLECT OF TEETH

If this is not done, what? As said above, most so-called indigestion is one result. Cancer, tuberculosis, appendicitis, rheumatism, arthritis, diseased tonsils, stomach ulcer, heart disease, constipation, deformed mouth, physical discomfort, decreased productive capacity and general unhappiness, are some of the direct results to be expected.

## NEED FOR DENTAL EDUCATION

The first essential is to get the *public* to realize these truths and get them to take action. I mean the people, the folks, the ninety-and-nine per cent. that are out on the farms and in the mills and factories. But "How shall they hear without a preacher?" The facts must be continually and persistently presented to them. But how can this be done? Dr. Brady says that a "good dentist does not conduct a bargain counter." If a patent medicine man sells his stuff he advertises—and lies. If a politician wants office, and he always does, he goes out and asks for votes, and buys and steals what he cannot otherwise get. But a physician and dentist cannot go out and ask for patients. Their advertising must always consist of a job well done when the patient comes. But the rub is getting the patient to come at the right time if at all.

## A PLAN OF CAMPAIGN

We already have shown that at least ninety-five out of every one hundred persons in North Carolina over six months of age need dental treatment. We are equally sure that in all matters of this kind the only strategy worth while is to begin on the children, especially the group masses of school children.

We have worked out a plan by which we propose to begin this year, the offer of free dental treatment of a limited class to school children, regardless of social or financial standing. We already have this work started in one county, and it is taking the combined efforts of the state and county health departments and the dentists to get the people out to take advantage of free treatment. But that is exactly what we expected, for visiting the dentist heretofore has not been a popular pastime. If the present activities of the state board of health had been put into effect suddenly ten years ago we would have been mobbed by the profession and the public. Now with the assistance of the dental profession we hope to begin just such an educational propaganda. I had the privilege of helping direct the first great campaign in 1915 against typhoid fever. And the same methods that got fifty-two thousand people vaccinated by our force that summer will get five thousand children treated by the dentists, if we have the same support from the dentists we had from the physicians in that effort.

We are proceeding on the principle that you gentlemen have failed to get the Mountain to Mahomet and so Mahomet must go to the mountain; that is the people. The plan is strictly ethical. We pay a young



dentist a small salary, send him out in the country with the health officer, with a folding army chair and let him do dental work among the people. No expensive gold or bridge work, etc., will be offered, but the simpler forms of treatment, which in the case of amalgam fillings will last a lifetime. This work in the summer is to be followed where possible by the installation of a permanent dental infirmary at the county seat town, to be open throughout the year certain hours each week, free to school children. This is bound to be a success, because it is founded on fundamentally correct principles. We expect to make mistakes here and there of course. We will have difficulties and obstacles to overcome.

In the past there have been many efforts in North Carolina to get at this proposition, but every case so far as I can find out resulted in failure. We shall, of course, profit by those mistakes. Those efforts failed chiefly for two reasons. *First*, the dentists offered their services free, and *second*, they proposed to treat only the children of the poor. Both propositions were radically wrong. In the first place dental work like any other public health question is worth paying for as a public proposition, and in the second place, whenever you start out to divide people into classes and card-index a proportion of them as indigent, you are out looking for trouble. This work is not one whit less a public health necessity than typhoid vaccination or giving free hookworm treatment. Now suppose, in our typhoid campaigns we had sent out notice that treatment would be given free to the poor, and the others could get it by going to their private physicians' office and paying five dollars for it. Would we have vaccinated fifty-two thousand people the first summer? No, we would not have seen a dozen. We made our effort then to get the richest people in every dispensary district to come first, they came and so did the rest. This is exactly what must be done if our dental campaign succeeds.

#### LOGIC OF THIS PROCEDURE

Now the logic of this method is as plain as daylight. Every big man in the medical profession was quick to see it when we began a few years ago. We had a few physicians in almost every county to protest that we would ruin their private practice. These same men look silly now when asked about it. Why? Because the work was educational and the physician is now called on oftener and at a time when he can accomplish something and when the patient is able to pay him for his services, and not simply called in to sign the death certificate. Some dentists will object, but they, with living material in North Carolina sufficient to keep busy ten times the number of dentists you now have for a lifetime, cannot fail to see the good logic in any plan which helps make a dental convert of our young school child; and therefore assures to some dentist a patient for life, which would otherwise go to the country physician for treatment or extraction when suffering with toothache.

## CO-OPERATION BETWEEN MEDICAL AND DENTAL PROFESSIONS

Some of the most important requirements for the success of this work, as well as some of the best results to be expected, is the necessity for closer co-operation between the physician and dentist. In a recent issue the *Southern Medical Journal* says that "There should be a reciprocity in references between the kindred professions of medicine and dentistry." And "It would be a matter of guess work to place an estimate upon the lives that have slipped into early oblivion because of the absence of this essential affiliation of kindred sciences."

## SUPPORT OF LEADING DENTISTS AN ABSOLUTE ESSENTIAL

Unless we have the sympathetic, unselfish, enthusiastic support of all the leading men in the dental profession our work will be a failure. It is true you will be building the bridge for those who are to come after you. But

"The works of God are fair for naught,  
Unless our eyes, in seeing,  
See hidden in the thing the thought  
That animates its being."

## DIFFERENCE BETWEEN TRADE AND PROFESSION

I hope I may be pardoned for calling attention of the young graduates especially, that every young dentist, no less than every young medical graduate, cannot remember too often that there is a world of difference between a trade and a profession. Dentistry is a profession. The tradesman asks How much can I get? The professional man, if he be true to his heritage, must ask What service can I render?

If we would be successful in treating school children and get the great mass of people to grow up to the "dental habit" early, every dentist must make it an invariable rule not to inflict pain unless it is impossible to avoid. One big reason why dental propaganda is hard to make popular, is because of the morbid fear of pain. And I am convinced that the dentists themselves are largely to blame for this attitude. I recall that several years ago I had a troublesome tooth, as usual, and consulted my dentist friend. He is a splendid dentist, good man and loyal friend, but professionally cruel as a German. He looked at my molar, and bluntly stated that the nerve must come out; and suiting the action to the word, he placed his instrument and with a mighty blow of the hammer pretty nearly killed me. Oh yes, he got "the" nerve and "my" nerve too. Trouble was it would have taken fifteen minutes of his time to have obtunded the nerve terminals and he was in a hurry to go home. Now, I hold that such an act is criminal, because there was no necessity for inflicting pain. Give me my chance of going back into his chair again or going over to the big electric chair at the Capitol, I would take the latter without a quibble, because death would be mercifully inflicted.



Patience and tenderness are the prime essentials necessary to succeed with school dispensaries. But it is well worth all the efforts.

#### REWARD

If this plan of work succeeds the reward to the dental profession will be great, both materially and otherwise. The practice of every man will increase in just proportion to his ability. You will have the satisfaction of knowing that you have placed your profession on a plane of great service to all the people. You will see in the years to come a material decrease in the death rate from many easily preventable diseases, due directly to your efforts. The sum total of human happiness and prosperity will be greatly augmented. But your greatest reward will be the conscious knowledge of a duty well done.

### RATIONAL PREVENTIVE DENTISTRY

BY ALBERT H. STEVENSON, D.D.S.

DIRECTOR OF THE COURSE IN ORAL HYGIENE IN COLUMBIA UNIVERSITY, NEW YORK

I CAME FROM NEW YORK and I found the journey very, very warm, and I was under the impression that the temperature would be very high down here. I found the temperature very comfortable, and if there is any warmth it has been in the reception of the membership of the society.

What I am going to say to you is in the nature of a message, and I hope you will not take it as a message strictly to North Carolina men, but a message to go out through all the world.

The topic of my paper is Rational Preventive Dentistry.

Incompatible as it may appear with the daily casualty list arriving from over seas, we are living in an era of conservation of man power. We as a nation are exerting every energy to the utmost to conserve and contribute to the health of the men at home that we might be better equipped to destroy the enemy abroad. The sudden plunging of the civilized world into the unexpected and unprepared-for horrors of war has caused a reversion to type, and the medieval, yes, and even the savage rudimentary instincts of the races again have come to the fore. While the defenders of our side of the bitter struggle do not believe that "might makes right," even those of the most pacific tendencies now realize that the mightier will conquer. The most conservative know that diplomacy and persuasion, treaty and tenet have little or no effect upon the progress of this war. "By force we must win," declares our President, and our entire people are fully awakened and are contributing to that force that we may be victors. What part has dentistry in this contribution?

A dental reserve corps of over three thousand young volunteers, the naval and army dental corps, the host of dentists in the Preparedness

\*Read before the North Carolina State Dental Society, 1918.

League doing work for the national army, and the gifts of dental ambulances, all stand as a record of which we might well be proud. But there is another phase of our professional service that has been given comparatively little recognition, and I am almost ashamed to state, is too often neglected in many private practices—the preventive side of dentistry.

The involved scientific theories of susceptibility and immunity to caries; the controversies over the chemical composition and quality of saliva; the reputed advantages of acid and antacid dentifrices or washes, all leave us in a quandary as to the proper value of preventive work. Time and research alone will solve these problems, and in the meanwhile it behooves us to formulate empirically definite rules and then to follow them.

For instance, the statement "a clean tooth never decays," has been declared a fallacy. It is contrary to our daily observations that all teeth, even if clean, will be free from caries. Yet, no one will deny that a tooth rendered clean by proper prophylactic treatment, and kept clean by the patient is less liable to decay. This gives us a good reason for evolving a technic that will thoroughly cleanse each tooth and for teaching a hygiene that will keep it clean.

The various forms of technic of prophylactic operations advanced, would and have filled many papers and most of them accomplished the results desired. You can range from the wooden points of B. Holly Smith to the saws of Hartsell, pick your star and hitch your wagon to it. The general practitioner should recognize this important part of his field and more earnestly apply it. If he is too busy he should have someone else do it for him. To send a patient out of the office without telling him a definite time to report for prophylactic treatment is comparable to a surgeon dismissing a patient without arranging for future dressings. Every patient should be placed on a time period basis for constant observation and preventive treatment. A system of notification to patients when they are due will be appreciated by most people and is the only way to get maximum results. A controlled patient is always the most satisfied one and a controlled practice is always the most enjoyable and lucrative one. States that have legalized the dental hygienist give the dentist an assistant that relieve him of all the foregoing, while keeping the field of operation still under his control.

But we have performed but half of the obligation where we have finished the actual operative work. We are told that the good Lord helps those who help themselves and we must assist our patients to help themselves by directing them how to care for their own mouths thoroughly, effectively and diligently. Considering the various types of individuals who present for our attention this no easy matter. Allowance must be made for the naturally indifferent type as well as for the one who is so preoccupied with other affairs in life that a tooth and a dentist



are considered respectively in the abstract as an affliction and the remedy. As a preventer of dental lesions the dentist is not recognized and yet this should be his enviable distinction.

History teaches us that pain or distress is the greatest stimulus to right living. Even the most incorrigible succumb to physical discomfort and mend their ways. We know that those who neglect their dental organs eventually suffer some degree of discomfort and this argument for better care of the mouth needs no further substantiation. Recent revelations of the effect of dental foci of infection upon the production of systemic disease have created almost as much interest in the lay mind as it has in the dental and medical professions, and has spurred to renewed effort many of the indifferent. It is not difficult to get co-operation from our patients if we do a little educating of the woefully ignorant public.

Unquestionably the place to teach Oral Hygiene is in the school-room. The impressionable mind of the child grasps facts and he readily forms habits which he will continue through life.

With all due tribute to the dentists who have given lectures to school children and to those dental societies that have instigated active propagandas in their own districts, would not results have been more permanent if energies had been directed toward the inclusion of mouth hygiene as an integral part of the school routine? Spasmodic educational campaigns unquestionably serve their purpose in arousing a naturally lethargic public, but a real continual application of anything, be it a precept or a hygienic habit, can only be instilled by repetition of instruction.

Do you know just how the boys and girls of your town are taught hygiene of the mouth, by whom it is taught and what text books are used? As members of the profession to whom is entrusted the care of this portion of the human body, should not this subject give you some concern? With a view of getting authentic data I secured for the National Dental Association information from the superintendents of schools of a number of cities as tabulated on opposite page.

It is very apparent that with but fifteen to ninety minutes per week devoted to the entire subject of personal hygiene, there is not much time allowed for the study of mouth hygiene.

As the first grade is the one at which simple hygiene is taught, and in the case of Boston, the kindergarten grade, the lesson must be short and graphic. The tooth-brush drill fulfills both these requirements and when conducted by count, particularly impresses the child mind. I would commend the dry-brush drill as taught in Bridgeport, Conn., schools and the wet-brush drill as taught in New York City, (the latter requiring especial facilities). Both are performed while the leader counts, the mouth being divided into sections and each section brushed separately. Every school in the United States should have drills of this

kind periodically. Dental Hygienists are particularly qualified to teach these drills and where they have been at work good results are evident. Where dental hygienists are not available for the purpose, the teacher should lead, she having received her instruction from a competent dentist. In the training school the young teacher should be taught the approved method of brushing and how to conduct a tooth-brush drill.

A careful review of the text books indicated shows a tendency of the authors to avoid detailed directions in the hygiene of the mouth. This is perhaps our fault as we have no standardized methods, but the text is very meager and in many cases the information positively incorrect in the light of our modern knowledge. Boston, Bridgeport and New York City are utilizing special pamphlets which present the subject in an excellent manner, but there is no accredited text book suitable for children.

These factors are so very obviously within the field of preventive dentistry, that no one will question the right of the dental profession to their supervision. Many cities have so recognized the advantages of this supervision that dentists are serving on their health boards as well

#### HYGIENE IN THE SCHOOL CURRICULUM

City	Periods per Week	Time Length of Period	Earliest Grade Taught	Tooth Brush Drill	Dental Inspection Supervised by		Text and Reference Books
					Health Dept.	Education'l Dept.	
Baltimore	1	45 min.	First	Yes	.....	Yes	Conn's and Gulick Series
Boston	...	30 to 60 min.	Kinder- garten	Yes	.....	Yes	Special Pamph- lets
Bridgeport	3	25 min.	First	Yes	Yes	.....	Conn's and Gulick Series
Chicago	5 3	15 to 25 min.	.....	Yes	Yes	.....	"Good Health" Gulick Series
Cleveland	...	60 to 100 min.	First	Yes	.....	Yes	Gulick Series
Newark	...	30 to 60 min.	6A	Yes	.....	Yes	Gulick Series Ritchies Krohn's
New York	2 5	10 to 15 min.	First	Yes	Yes	Yes	Syllabus in Hygiene and Special Pamph.
Philadelphia	...	40 to 70 min.	First	Yes	Yes	Yes	Open List
Rochester	...	.....	.....	.....	No reply	.....	.....
Seattle	...	.....	.....	.....	No reply	.....	.....
San Francisco	...	30 to 45 min.	First	Yes	.....	Yes	Blaisdell's Gulick Series Barry's



as on educational committees. By their influence these men have inaugurated reforms that already show definite results in their respective municipalities.

One of the first requisites is the adoption of a teachable hygiene by the dentists themselves. A very meritorious hygiene may be very effective in private practice, but be utterly impractical to teach to large groups of children. Psychology has been defined as the science of consciousness. To the child mind this consciousness comes slowly and impressions must not be conveyed too rapidly or all is chaos. The method adopted must, therefore, have simple principles easily inculcated. Then too, existing school routine should be given every consideration and efforts made to comply with rather than augment the present curricula. Rational suggestions always are appreciated by the authorities responsible for the physical welfare of our school children.

It is exceedingly difficult to educate the educators and until they appreciate it the dentist must do the educating himself. It is quite natural that the average dentist (with emphasis on the average) should have considerable hesitancy about public speaking and men should be especially trained for this work. A study class should be formed to prepare dentists to teach oral hygiene. Such a class was very successfully conducted by the First and Second Districts of the Dental Society of New York. Lecture outline forms secure uniformity of presentation and yet ample opportunity for originality.

Notwithstanding the abuse that has been heaped upon it, the tooth brush is the most effective implement of hygiene that we now possess. As with any other instrument a lack of or improper sterilization renders it a menace to health, but it is illogical to condemn it on this score. All tooth-brush bristles come from the wild boar that roams the woods and fields of Northern Russia and Siberia from whence they are transported to the factory and cleaned and sorted. A magnified bristle presents three parts: the flag, the stem and the butt. It is the stem that is used for the manufacture of tooth brushes. Great care is used to prevent the loss of elasticity of the brush, for a lifeless bristle means a useless brush.

Many authorities believe that the sterilization of the tooth brush is an unimportant consideration. They argue that as long as one person uses the one brush the germs are his own and therefore are harmless. In this argument a bacteriological principle is ignored—the rapid propagation of bacteria under conditions of heat, moisture and darkness. Bacteriological experiments prove that brushes used in removing debris around the teeth and then hung up in the air, show marked activity of bacterial growth.

Dr. William Letterer of the Vanderbilt University, of the State of Tennessee, made the following experiments: To test the germicidal power of formalin fumes (formaldehyde gas—40 per cent. in water).

The tooth brush was rendered sterile by superheated steam (autoclave). The sterile brush was dipped into pure culture of streptococcus pyogenes, and was then returned to the receptacle to be acted upon by the formaldehyde gas. Three other cultures were treated in like manner, and in every instance double controls used, positive and negative. The result was that complete sterilization was effective in less than an hour's time. By drying the brush with the bacteria adhering to it the effectiveness of the sterilization was greatly impaired. The above results were obtained by using only the full strength formalin. No dilutions were used. The question as to whether it would be too irritating to the gums can be answered in the negative if the brush is rinsed in water before using.

An ordinary preserve jar will disinfect the brushes of an entire family if they are placed with the brush end up and the handles resting in the one-half inch of formalin contained therein. The simple expedient of thoroughly washing and sprinkling with sodium chlorid is a partial disinfectant but is not as effective as the formalin.

The hygiene of the mouth of our soldiers and sailors is giving us much concern at the present time. A pathological condition of the mucous membrane commonly called "Trench Mouth," is now engaging the attention of the British army dentists. It was first believed to be due to the prolonged diet of canned goods, but is now attributed to unclean mouths. Napoleon's assertion that "An army travels upon its stomach," can easily be translated to "An army travels upon its teeth," for without proper mastication the usual army "chow" (as our boys in khaki call it) is indigestible. As early as the Russo-Japanese War the importance of this was recognized and not only was each Jap soldier dentally inspected and cared for but he was provided with a tooth brush at the government's expense. It is safe to assert that all the armies in the present struggle are given dental inspection as are the New Zealanders.

Our boys are not given tooth brushes, but are supposed to supply them as part of their personal kit, and can purchase new ones and dentifrices at the various camp canteens. Under the auspices of the Y. M. C. A. the practical care of the mouth is presented to the men while training, and efforts are made to have them follow the instructions given. They probably will not have an opportunity to use their teeth when they hit the Von Hindenburg line but they will be better able to use their bayonets. If you have impressed a fighter with the importance of caring for his mouth while exposed to the extreme vicissitudes of camp life you have done your bit toward making him fit to fight, and from present indications it is evident that the physically fit are the only ones that can endure.



To give our readers an idea of the character of the dental bulletins we here reproduce one of them greatly reduced to fit our magazine page.

Health Service Series

H. S. No. 6



Bulletins Are Read by 4,500,000 Workmen Each Week  
NATIONAL SAFETY COUNCIL, CHICAGO, ILL.



## The Secret of Good Health Is No Secret

It Consists of Following a Few Simple Rules

# Clean Up Your Mouth



These teeth can chew food properly



What can you expect from teeth like these?

### INDIGESTION

Food, to be properly digested, must be thoroughly chewed and moistened through and through with saliva. Your stomach cannot chew your food for you—it has no teeth.

### CONSTANT PAIN AND DISCOMFORT

No one can be healthy and happy unless he is free from pain. **BAD TEETH**, sooner or later, will cause misery, suffering, loss of sleep and wages. If Nature hadn't intended teeth to be important to us the warning would not be so plain—they wouldn't ache so when diseased.

A dirty mouth often results in pyorrhea, which means that you will constantly be swallowing the pus (germs) that is being produced around the roots of the teeth so affected.

Don't take poison in this form. It often causes heart disease, rheumatic pain, neuralgia, painful joints, ulcers of stomach, cancer, and other long disabling diseases.

## Good Teeth and Clean Gums Build Up the Body

(Prepared by and issued under the auspices of Health Service Station.)

# EDITORIAL

## INDUSTRIAL DENTISTRY

**T**HERE ARE probably few of our readers who realize how industrial dentistry is being recognized as an efficiency measure by progressive manufacturers and other business concerns throughout the country.

Since it has been pointed out that focal infections from the mouth and teeth are the cause of many systemic ailments, large business concerns recognize more than ever the importance of better care of the mouth and teeth among employes, from an efficiency standpoint, and the number of industrial dental clinics is increasing constantly.

The first industrial dental clinic of which we have knowledge, was instituted, twenty or thirty years ago, in the factory of the Barber Match Company, Akron, Ohio. There were so many cases of phosphor-necrosis of the jaws from infections through decayed and broken-down teeth and roots, that the company established a clinic for compulsory inspection and care of the teeth of employes, with a view of eradicating these cases of necrosis. This proved to be effective, not only so far as phosphor-necrosis was concerned, but from an efficiency standpoint of employes.

Within the past few years more and more industries have added the dental clinic to the welfare department of their institutions.

Regarding the value of preventive dentistry to industrial corporations we find an answer in the following extracts from replies from a number of firms conducting these clinics:

The Joseph & Feiss Company, Cleveland, Ohio, says:

"While it is difficult to trace the definite results of benefit obtained from this work, we feel convinced, after six years' experience, that it should be classed along with medicine and surgery in first aid work.

"We are convinced without drawing any comparison that dentistry, medicine and eye work form an essential and profitable part of our work, and are all of them a tremendous aid in the development of steady and efficient men and women."

The Kabo Corset Company, Chicago, says:

"The results of dentistry in our factory have in many ways exceeded our expectations. The dental work has saved our employes, as well as ourselves, over two thousand hours in the past six months' time which would have been counted as lost working time. It has increased production in proportion to working hours saved. We have one instance in which we are confident a valuable employe was saved from insanity and a great many cases where pyorrhea was prevented, thereby saving the employe and ourselves much valuable time for work that would have eventually been lost.

"We do not hesitate in saying that we consider dentistry, and especially preventive dentistry, as of equal importance to medicine and surgery as welfare features in any corporation."



The T. Eaton Company, Toronto, says:

"We find that the most apparent result of dentistry in our establishment is the emergency work which usually retains the individual at work who would otherwise have to have treatment outside and thereby lose from an hour or two, to half a day, or perhaps longer.

"The work of our dentist is confined to giving relief in cases of toothache, giving advice, making examinations, charts, cleaning of teeth, and, when necessary, making X-ray plates for employes to take to their own dentists.

"We consider that it increases efficiency and has been of undoubted benefit to numbers of our employes, whose appreciation is evidenced by the numbers who take advantage of it."

The Ford Motor Company, Detroit, says:

"Will state that the dental work done at this plant so far has been very limited. We have had one dentist for the past year, who devoted his time exclusively to dental work caused through injuries received by employes while at work, and to the inspection given to employes who come under our observation requiring dental attention.

"It is impossible definitely to estimate the good done by this department, but to date we have no cause to regret the installation of the dental department and contemplate increasing its scope in the future."

D. H. Holmes Co., Ltd., New Orleans, says:

"Our general health has improved and we lay a great part of this improvement at the door of the dentist's office.

"The instructing in dental hygiene and the advice about tooth brushes, etc., is left entirely to the dentist, although throughout the year at least three lectures on the teeth have been given for the benefit of the nine hundred employes in the store."

H. J. Heinz Company, Pittsburgh, says:

"We cannot give specific answer to your questions, because none of our welfare features was ever undertaken with the conscious purpose of improving our output or our profits. When we add any new feature for the benefit of employes, the determining factor is whether the employes will be interested and will take advantage. Consequently we never figured the dollars and cents value of our dental department, or made any observation as to reduction of lost time.

"The department is in charge of a graduate, experienced dentist, who does all sorts of dental work except bridgework.

"This work is all done on the company's time and at the company's expense. We do feel, however, that even more important than dental surgery is instruction in oral hygiene and so our man always teaches his patients the use of the tooth brush and dentifrices. This element of the work extends beyond the factory, for the employes carry into their homes and to the neighborhood the gospel of the toothbrush."

In the industries there are now four classes of clinics:

*First*, those wherein the company hires the dentist to do the examination and prophylaxis at the company's expense, and he refers the employe to the ethical practitioners of the city for dental work.

*Second*, those wherein the company dentist examines the teeth of all employes and does necessary prophylaxis, and then will do the necessary dental work "at cost" which is about the cost of materials used.

*Third*, those wherein the company pays all the cost of first-class dentistry for all employes.

*Fourth*, those wherein the company hires a dentist to care for the teeth of the children of employes.

Some firms start with a clinic of the first class—probably partly as a show affair or as a “welfare” feature; but it is soon brought to their attention that the average workman pays out about \$50.00 a year to the dentist and too often to a charlatan who leaves him in a worse condition than before he started and most of the employers soon realize that as an efficiency factor alone the dental clinic is worth while. If an employe has an hour appointment with a dentist, very often he or she will take a day off which means an idle machine for the day.

The employes of one Ohio firm saved twenty-five thousand hours’ time between January 1st and August 1st, 1918, by having their dental work done at the plant. The minimum wage was \$1.00 per hour. If the men saved \$25,000.00 in wages, how much did the firm save?

The following corporations are at the present time operating dental clinics:

The Alameda Co., Oakland, Calif.; The Amoskeag Mfg. Co., Manchester, N. H.; Armour & Co., Chicago, Ill.; The Armstrong Cork Co., Pittsburgh, Pa.; The Avery Co., Peoria, Ill.

Babson’s Statistical Organization, Wellsley Hills, Mass.; The Bailey Co., Cleveland, Ohio; Berkshire Knitting Mills, Reading, Pa.; Bloomingdale Bros., New York, N. Y.; The Bausch & Lomb Co., Rochester, N. Y.

The L. D. Caulk Co., Milford, Delaware; Chicago Telephone Co., Chicago, Ill.; Cincinnati Milling Machine Co., Cincinnati, Ohio; Colgate & Co., Jersey City, N. J.; Colorado Fuel & Iron Co., Pueblo, Col.; The Crane Co., Chicago, Ill.; Chino Copper Co., Hurley, N. M.

Dayton Electric Laboratories Co., Delco, Dayton, Ohio; Diamond Match Co., Chicago, Ill.; Dress & Waist-Makers Union International Garment Workers, New York, N. Y.; DuPont Powder Co., Wilmington, Dela.; Dayton-Wright Aeroplane Co., Dayton, O.

T. Eaton Co., Limited, Toronto, Canada; The Emporium, San Francisco, Calif.; Erie Forge & Mfg. Co., Erie, Pa..

Filene Co-operative Association, Boston, Mass.; Firestone Tire & Rubber Co., Akron, Ohio; Florence Mfg. Co., Florence, Mass.; Forbes Lithographic Co., Chelsea, Mass.; Ford Motor Car Co., Detroit, Mich.

B. F. Goodrich Co., Akron, Ohio.

H. J. Heinz Co., Pittsburgh, Pa.; D. H. Holmes Co., New Orleans, La.; J. Hood Rubber Co., Watertown, Mass.; Hart-Schaffner-Marx Co., Chicago, Ill.

Inland Steel Company, Indiana Harbor, Ind.; The International Harvester Co., McCormick, Chicago, Ill.; Int. Garment Workers Union, New York, N. Y.; Jones Store Co., Kansas City, Mo.; Joseph & Feiss Co., Cleveland, Ohio.

Kabo Corset Co., Chicago, Ill.; Kimberly, Clark & Co., Neenah, Wis.; Kolynos Co., New Haven, Conn.; Kaynell Co., Cleveland, Ohio.

Larkin Co., Buffalo, N. Y.; The R. K. LeBlond Machine Tool Co., Cincinnati, Ohio; Lord & Taylor, New York, N. Y.

Macy Mutual Aid Association, New York, N. Y.; James McCreery, New York, N. Y.; Metropolitan Life Insurance Co., New York, N. Y., McGregor, N. Y.; Montgomery Ward Co., Chicago, Ill.; Morris & Co., Chicago, Ill.

National Lamp Co., Cleveland, Ohio; National Cash Register Co., Dayton, Ohio; National Lamp Works, Warren, Ohio, Cleveland, Ohio, Youngstown, Ohio, St. Louis, Mo.; New York Telephone Co., New York, N. Y.

Pocahontas Coal Co., West Virginia.

Schrader & Sons, Brooklyn, N. Y.; Sears, Roebuck & Co., Chicago, Ill.



Tennessee Coal & Iron Co., Birmingham, Ala.

John Wanamaker, Philadelphia, Pa.; Wanamaker Store, New York, N. Y.; The S. S. White Dental Mfg. Co., Philadelphia, Pa.; Washburn-Crosby Co., Minneapolis, Minnesota.

Last August in Chicago, at the time of the National Dental Convention, many of the dentists conducting industrial clinics organized themselves into a society to be known as The National Association of Industrial Dental Surgeons. Dr. Carl E. Smith, Akron, Ohio, was elected president, and Dr. E. L. Pettibone, Cleveland, Ohio, secretary.

The object of the association is:

"To foster the study and discussion of the problems peculiar to the practice of industrial dental surgery; to develop methods adapted to the conservation of health among workers in the industries; to promote a more general understanding of the purposes and results of the dental care of employes; and to unite into one organization, members of the dental profession specializing in industrial dental surgery for their mutual advancement in the practice of their profession."

There is another organization that is disseminating the knowledge of oral hygiene among industrial workers, and that is The National Safety Council of Chicago.

The council is a voluntary co-operative institution of three thousand seven hundred and fifty industries, railroads and others, interested in lessening accidents to workmen and the general public, as well as the general health problem in industry. The council was organized six years ago for the purpose of establishing an information bureau to help its members to solve their accident and health problems.

One of the unique features of the council's work has been the distribution of "safety bulletins," for both employer and employe, for over a period of two hundred and ninety consecutive weeks. Seven million of these bulletins were distributed last year. Bulletins pertaining to oral hygiene and diseases of the mouth and teeth are included in those distributed.

These bulletins are about 8 x 11 inches and are posted in the industrial plants each week, where they are read by from forty-five hundred thousand to six million workmen during the week.

Thus it will be seen that much good must come to mankind through this dissemination of the knowledge of oral hygiene by the industries.

Aside from what we have told you in this editorial we are publishing in this issue several papers pertaining to industrial dentistry for your further enlightenment.

# SOCIETY ANNOUNCEMENTS

## Ohio State Dental Board

The Ohio State Board of Dental Examiners will hold their regular examination for applicants who desire to practice dentistry in Ohio at the Ohio State University, the fourth Monday of June, 1919, examination will begin at 8 o'clock A.M.

Applications must be in the hands of the secretary by June 12th.

A. F. LINSBOTT, *President*, Marion, Ohio.

HOLSTON BARTILSON, *Secy.*, 150 E. Broad St., Columbus, Ohio.

## The Psi Omega Fraternity

The Psi Omega Fraternity, (Ohio Alumni Chapter) will hold its Reunion and Convention, at Cedar Point, Ohio, July 7th and 8th, 1919. If you never had a good time you'll have one here!

E. L. PETTIBONE, *Chairman Reunion Com.*

6503 Detroit Avenue, Cleveland, Ohio.

## Pennsylvania State Board

The next examination by the Pennsylvania Board of Dental Examiners will be held in Philadelphia and Pittsburgh, on Monday, Tuesday, Wednesday, Thursday, June 23, 24, 25 and 26, 1919. The practical examination will be held on Monday, June 23rd, the first day, in the University of Pittsburgh Dental School, in Pittsburgh, and the Evans Institute, University of Pennsylvania, Philadelphia. The operative examination will be held at 8:30 A.M. and the prosthetic examination at 1:30 P.M. The theoretical examination will be held at the College of Pharmacy, in Pittsburgh and at Musical Fund Hall, Philadelphia.

Application papers can be secured from the Department of Public Instruction, Harrisburg. For further information, address the secretary

4630 Chester Ave., Philadelphia, Pa.

ALEXANDER H. REYNOLDS.

## Indiana State Board

The next meeting of the Indiana State Board of Dental Examiners will be held at the State House, Indianapolis, June 23rd to 28th, inclusive. For application and instructions, write to

H. C. MCKITTRICK, *Secretary-Treasurer*.

605 Hume-Mansur Bldg., Indianapolis.

## West Virginia State Board

The next meeting of the West Virginia State Board of Dental Examiners will be held in Wheeling, W. Va., beginning at 9 o'clock on Tues-



day morning, June 24th, 1919. For further information and application blanks address R. Mason Hite, Secretary, Mannington, W. Va.

R. MASON HITE, D.D.S., *Secretary.*

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### **Tennessee State Board**

The next meeting of the Tennessee State Board of Dental Examiners will be held in Nashville, Tennessee, June 30th, 1919, for the examination of candidates of registration.

All applications must be in the hands of the secretary on or before the 20th of June. For further information address F. W. Meacham, Secretary, 911-12 Hamilton National Bank Bldg., Chattanooga, Tenn.

Chattanooga, Tenn.

F. W. MEACHAM, *Sec'y-Treas.*

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### **Tennessee State**

The Fifty-second Annual Meeting of the Tennessee State Dental Association will be held at the Hotel Hermitage, Nashville, September 4, 5 and 6.

From all appearances our program promises the greatest meeting ever.

JAMES J. VAUGHN,

*Chairman Publicity Committee.*

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### **South Carolina State Board—Change of Date**

The meeting of the South Carolina State Board of Dental Examiners has been postponed until June 30th. The examinations will begin promptly at 9 o'clock, Monday morning, June 30th, at Bamberg, S. C.

All applications *must* be in the hands of the secretary by June 20th.

Application blanks and further information may be obtained by addressing,

R. L. SPENCER, *Secretary,*

Bennettsville, S. C.

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### **North Carolina Dental Society**

The North Carolina Dental Society will hold its next Annual Session, June 25th, 26th and 27th, at Asheville, N. C., Headquarters Battery Park Hotel.

W. T. MARTIN, *Secretary.*

Benson, N. C.

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### **Kentucky State Dental Association**

The Fiftieth Anniversary-Jubilee Meeting of the Kentucky State Dental Association will be held at Louisville, Ky., June 9-10-11-12, 1919.

A Post Graduate Course of unusual interest has been planned.

Address all correspondence to

W. M. RANDALL, *Secretary.*

Louisville, Ky.

### Vermont State Board

The next meeting of the Vermont Board of Dental Examiners, for the examination of candidates to practice in Vermont, will be held at the State House, Montpelier, commencing at 2 P.M., on June 30th, 1919, and continuing for three days.

To be eligible for examinations a candidate must be : *First*, twenty-one years of age. *Second*, a graduate of a high school of the first class, and *third*, a graduate of a reputable dental college.

Applications must be in the hands of the Secretary not later than June 21st. For further information apply to

HARRY F. HAMILTON, *Secretary*.

Newport, Vermont.

### Association of Military Dental Surgeons of the United States

The annual meeting of the Association of Military Dental Surgeons of the United States will be held at New Orleans, La., October 20th-24th.

R. W. WADDELL, *Secretary- Treasurer*

347 Fifth Avenue, New York.

### The Indiana State Association

#### SIXTY-FIRST ANNUAL MEETING

The 1919 meeting of the Indiana State, May 20, 21, 22, was a notable one in many respects. The first-day attendance probably established a record. The War Department film, "Fit to Fight" shown by Dr. Otto U. King, Wednesday morning, was one of the most interesting and instructive features ever shown at a convention; papers by Drs. F. E. Roach, Col. W. H. G. Logan, and Weston A. Price, were of prime importance, and a day crammed with clinics of unusual merit, all bore testimony to the earnest work of all officers and committees.

The resignation of Dr. Albert R. Ross, as secretary, an office that he has filled with splendid efficiency for five years, his unanimous nomination as president-elect, and the selection of Dr. A. J. Kinim, of Evansville, Ind., to succeed him as secretary, and the final winning of the Cup by the West-Central Component, as recorded below, were noteworthy events.

Resolutions condemning the radical Socialists, the I. W. W. and Bolshevism, and pledging support to the government, were adopted by unanimous and ringing vote. The resolutions were introduced by Dr. R. R. Gillis, of Hammond. A copy of the resolutions will be sent to the President of the United States, the Governor of Indiana and to all Indiana Senators and Representatives. The resolutions follow:

WHEREAS, There exists at the present time throughout the land a considerable spirit of social and industrial unrest, and

WHEREAS, Such unrest is being aggravated, sponsored and increased through and due to the efforts of certain individuals and organizations that are largely alien to American ideals of good citizenship, and

WHEREAS, Such unrest is decidedly detrimental to the welfare of the United States and interferes grossly with the constitutional right of our loyal citizens, therefore be it

RESOLVED, By the Indiana State Dental Association, in its sixty-first annual session now assembled, that it is our desire to register our condemnation and disapproval of all



agitation and propaganda emanating from the radical Socialists, the I. W. W., the Bolsheviks and the like.

That we are here and now reaffirm our faith in our present executive and legislative powers, and desire to pledge our loyal and constant support to any preventive or remedial legislation or procedure which their wisdom might direct, and be it further

RESOLVED, That these resolutions be spread upon the records of this meeting and copies be sent to the President of the United States and to Indiana's Governor and United States Senators and Representatives of Congress.

After some discussion it was decided that the board of trustees be authorized to call the meeting next year, the third Monday in May. It has been the practice of the association to hold its three-day sessions beginning the third Tuesday in May, and the change is made in order that the members in the remote portions of the state may make the trip to Indianapolis on Sunday, and save one day which would otherwise be spent in travel.

The cups awarded in the three classes went to the West-Central Association, Class A; Ben-Hur Society, Class B, and to the Green County Association, Class C. Class A is composed of societies of more than sixty members, Class B of societies from twenty to sixty members, and Class C of societies under twenty members. The awards are made to those societies which have the highest percentage of paid members by Feb. 12, the highest percentage of members by May 1, and the highest percentage of attendance on the second day of the annual meeting. The West Central Association, having won the cup for the third time, will retain it permanently.

H. C. Carr, of Indianapolis, president-elect of the association, automatically becomes president for the coming year. Albert R. Ross, of Lafayette, secretary of the association for the five years, was made president-elect. A. J. Kimm, of Evansville was chosen secretary and C. A. Priest, of Marion, treasurer. C. R. Jackson, of Indianapolis was re-elected executive committeeman. Victor H. Knapp, of Evansville, Leroy Myer, Rensselaer, and H. C. McKittrick, Indianapolis, were elected representatives of the state association on the state board of dental examiners for a term of two years. Earl Brooks, Noblesville, was named supervisor of clinics, and O. A. VanKirk, of Kendallville was made master of exhibits. The following were chosen delegates to the house of delegates of the national meeting of dentists to be held at New Orleans next October: C. E. Redmon, Peru; R. F. Lucas, South Bend, and C. A. Nixon, Valparaiso. J. A. Stockley, South Bend; F. C. Henshaw, Indianapolis, and N. W. Van Osdol, Indianapolis, were named alternates.

The following were made life members of the state association: D. E. Delzelle, Logansport; R. W. VanValzah, Terre Haute; T. S. Hacker, Indianapolis; G. E. Johnson, Fort Wayne; S. F. Bosler, Rockport; O. H. Thomas, Pendleton; W. N. Wirt, Rockville; J. R. Pugin, Valparaiso; G. B. Martin, Frankfort; R. M. Smiley, Washington; J. D. English, Worthington; N. W. Hiatt, Marion; J. H. Morrison, Connorsville; J. S. McCurdy, Fort Wayne; W. W. Gates, Indianapolis; J. D. Coyle, Fort Wayne; B. F. Shepherd, Pleasantville; W. M. Hindmen, Vincennes; Richard Newhouse, Frankfort; W. H. Stephenson, Lebanon; L. L. Hinshaw, Edinburg; E. E. Reese, Indianapolis; C. F. Williams, Terre Haute; M. M. Haas, Evansville; R. I. Blakeman, Indianapolis; M. H. Raschig, Indianapolis; S. F. Gilmore, Indianapolis; M. A. Mason, Fort Wayne, and F. R. McClannahan, Rushville.

# OHIO STATE SOCIETY

Through the generosity of the publishers of THE DENTAL SUMMARY, this space is made available for the use of the State Society and its Components in making announcements of general interest. The secretary of the State Society will use this medium as occasion requires and it is hoped that this will prove a valuable means of disseminating information to the Components and to the membership individually.

Many members have not yet paid their dues for 1919; the mailing list of THE DENTAL SUMMARY and of the *National Dental Journal* is made up from those who are in good standing, i. e. those whose dues are paid for the current year. If you have not paid yours, please do so at once and secure your journals regularly from the beginning of the year.

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## The Component Societies of the Ohio State Dental Society

(This list of Officers is compiled from information furnished by the Secretaries of the various Components, where incorrect it is due to lack of information relative to elections. Secretaries are requested to keep the list correct by notifying the secretary of the State Society or the Editor of THE DENTAL SUMMARY of the result of elections.)

- 1 MAUMEE VALLEY DENTAL SOCIETY, meets 2d Tuesday, June and Oct.—Pres., A. B. Thompson, Metamora; V. Pres., N. A. Cunningham; Rec. Sec., O. S. Applegate; Cor. Sec., H. M. Jordan, Hicksville; Treas., J. A. Benner.
- 2 TOLEDO DENTAL SOCIETY, meets 3d Friday. Pres., W. J. Dierks, 1018 Spitzer Bldg., Toledo; V. Pres., R. K. Wood; Sec., L. C. Jackson, 2205 Ashland Ave., Toledo; Treas., C. H. Cox
- 3 WOOD COUNTY DENTAL SOCIETY, meets 2d Wednesday.—Pres., F. W. Wemmer, North Baltimore; V. Pres., B. D. Roe; Sec., R. E. Milbourn, North Baltimore; Treas., T. M. Lea.
- 4 NORTH CENTRAL OHIO DENTAL SOCIETY, meets 3d Wednesday, Jan. Apr., July and Oct.—Pres., R. Woleslagel, Bellevue; V. Pres., A. G. Thatcher, Fremont; Rec. Sec., L. H. McDonald, Norwalk; Cor. Sec., S. H. Rogers, Sandusky; Treas., E. S. Braithwaite, Willard.
- 5 LORAIN COUNTY DENTAL SOCIETY, meets 1st Tuesday, Feb., Apr., Sep. and Nov.—Pres., W. G. Schaeffer, Amherst; V. Pres., J. A. Minnich; Rec. Sec., P. E. Maddock; Cor. Sec., J. E. Betteredge, Elyria; Treas., J. E. Trombley.
- 6 CLEVELAND DENTAL SOCIETY, meets 1st Monday. Pres., W. C. Stillson; V. Pres., Ira Saum; Rec. Sec., S. F. M. Hirsch, 5415 Euclid Ave., Cleveland; Treas., E. D. Phillips; Cor. Sec., Frank Acker, 14516 Detroit Ave.
- 7 NORTHEASTERN OHIO DENTAL SOCIETY, meets 2d Monday.—Pres., N. H. Bishop, Andover; V. Pres., H. O. Frederick; Sec., O. T. Battles, Jefferson; Treas., O. T. Battles.
- 8 NORTHWESTERN DENTAL SOCIETY, meets 4th Wednesday.—Pres., A. N. Bruzilius, Lima; V. Pres., E. A. Bobo and G. L. Brunk; Sec., J. W. Dimond, Lima; Treas., J. K. Bannister.





# NEWS and OPINIONS

CONDUCTED BY G. E. HARTER

## LACONIGRAMS

Present condition of peace negotiations brings out very startlingly the strange twist in the Teutonic mind, which is able to see nothing wrong in anything done by the unspeakable hun during the years of the war, nothing that demands punishment, nothing that deserves ostracism; and really expected to be treated as an honorable enemy who had conducted an honorable and necessary war according to the "rules of the game." Just how such a state of mind possibly can exist is the problem of the ages, unless we agree to consider Germany as inhabited by a race of uncouth barbarians who must be taught the rudiments of civilization.

Only in those parts of Germany occupied by the Allies is there peace. The rest of the country is torn by fratricidal strife. No man's life or property is safe for an hour. No wonder some of the natives of the occupied territory are praying that the Americans may stay there for ten years.

The Civil Court of Massachusetts has decided that appointments with dentists must be kept, unless the patient is willing to pay for the time assigned to him, whether he keeps his appointment or not. A dentist at Springfield was awarded a verdict for \$28 for unkept appointments. Hairdressers and manicure "artists" long have enforced payment for time set apart for customers who do not "show up," and surely dentists are entitled to at least equal consideration, since they have nothing to sell except time and personal service.

The Metropolitan Life Insurance Company, New York, has made clean and sound teeth compulsory for all employes in the home office. Each of them must visit the dentist at least twice each year.

"Forsyth Day," the anniversary of the presentation of a loving cup to Thomas A. Forsyth, founder of the Boston Infirmary, by the dentists of the world, was observed May 6, by many special clinics and appropriate exercises.

Staten Island employes of The S. S. White Dental Mfg. Co., subscribed around \$90,000 for the V-Loan. This is nearly double the amount subscribed for any previous loan.

The Solvay Process Co., Solvay, N. Y., since February 15, 1917, has paid for time and material used by the Boyd School Dental Clinic in performing nearly ten thousand operations, valued at more than \$10,000 at ordinary fees. Fees actually paid by patients, less than \$500. From an average condition of 80 per

cent. bad, the school has advanced to nearly 96 per cent. good.

Twenty-two American women have been decorated by the French government for services rendered during the war at the American Woman's Hospital, No. 1, at Luzancy. Better than staying at home and lamenting.

Dr. Lawrence Ford, Columbus dentist, one of the first men from the capital to go overseas in the service, has returned to his practice, bearing the insignia of the "Yankee Division" and three gold service stripes on his left sleeve.

The great State of Indiana takes much pride in the fact that her state institutions and organizations are unsurpassed from the standpoints of efficiency and modern ideas of advancement. Her educational institutions offer opportunities and privileges that are the equal of any in this great nation. The Governor, Hon. James P. Goodrich, has been the leading factor in bringing this condition about through his efforts at all times to find the right man for the right place to conduct the state affairs in a thoroughly business and scientific manner. Seeing an opportunity of increasing the efficiency and broadening the scope of the activities and usefulness of the Indiana State Board of Health, he appointed on May 9th, Dr. Frederick R. Henshaw, Dean of the Indiana Dental College, a member of that board to serve for a period of four years.

There is but one other instance where the Governor of a state has shown such rare good judgment and farsightedness in appointing a dentist on the State Board of Health. The Governor of Ohio having appointed Dr. Homer C. Brown, of Columbus, to a like position at the time of his election to the presidency of the National Dental Association.

The Indiana State Board of Health has conducted an oral hygiene campaign throughout the state during the past few years in conjunction with its other educational work. It is the board's intentions now to extend this field and create a separate department for this particular work. There is no other man in the state who is so peculiarly fitted for this particular line of work as Dr. Henshaw. He has been intimately connected with every movement of this character in the United States for the past twenty years. His efforts to secure better dental conditions in the public schools of the state have received the attention of men all over the country, and it was largely his efforts and successes along this line that won for him this very fitting recognition.

The policy of Governor Goodrich is one well



worthy of consideration by other executives, for disregarding political affiliations he chose the man best fitted for the place. Politics have no place where the health and welfare of the public are at stake and Governor Goodrich was big enough to see this.

Good things may be expected to proceed from Indiana in the oral hygiene and dental health, for with such a Governor at its head, supported by a state board of health composed of good, capable, conscientious men of Dr. Henshaw's type, this and only this can be the result.

A friend of mine in New York City has a farm at Tennan Lake, Sullivan County, New York, at an elevation of three thousand feet above sea level, where it is cool enough for blankets every night in the summer. To this farm each year he has taken poor children out of sweltering New York City, and given them a real vacation—at his own expense.

He is now anxious to carry on his good work further. In addition to taking care of more poor boys from New York City for the summer, he wants to take care of some of the crippled soldier boys—convalescent cases—poor chaps with arms, legs and other parts of their bodies shot away. He feels that as these boys fought our battles, so should we do our bit in relieving their suffering as much as possible, and he has the place and is willing to give his time and as much money as he can possibly spare. I, for one, am helping this good work along and I shall appreciate any financial assistance you may be able to render.

Send \$1.00, \$5.00 or \$10.00—every little helps—to George C. Crowley, 34 West 190th Street, New York City.

You will be credited for your contribution in a book to be published this fall, with pictures of the boys that your donation has helped to make happy, and I know when you read the book you will be proud of having helped, no matter in how small a way.

As this cause is one of the worthiest I know of, I am going to ask you to pass the information along to others who may want to help.

### Lake Division, American Red Cross— A Warning

The army isn't coming home in rags and tatters. It isn't a public charge. Discharged soldiers don't have to beg or to peddle souvenirs for a living.

American Red Cross, Lake Division headquarters, has been asked by National headquarters to issue this second warning to people in Ohio, Indiana and Kentucky.

"The situation is becoming almost a menace," says the order.

The American Red Cross in every town and municipality in the three states of the Lake Division, is helping the man who comes home to take up the life he left to enter his country's service.

Red Cross Home Service workers are ready to help him get a job, and a good one. If he is in

need of a little ready money or his family is suffering, the Red Cross is ready with a loan. If he is disabled and cannot go back to the old line of work, the government will train him for something else. It isn't necessary for him to beg, or to sell post cards, buttons, or any kind of souvenirs.

Most of the uniformed peddlers are fakirs. They have no right to the uniform they are wearing. Many of them have never been inside an army camp. But it is fairly easy to fake a uniform and get easy money from the patriotic public. "Don't encourage the man who commercializes his country's uniform! Don't buy his wares!"

### The United States Training Corps for Women—Its Foundation and Object.

We are giving considerable space to what we consider a very admirable movement, in the hope that many run-down women may take advantage of an unusual opportunity.

A newly-formed national organization called the United States Training Corps for Women has for its slogan "Better Health for Women." Some of the highest officers of the army and navy are behind it. In addition it has the aid and assistance of many prominent men and women in all walks of life. It is one of the outgrowths of the war, and bids fair to be permanent.

The United States Training Corps for Women really "saved the day" last summer in Washington. In answer to Uncle Sam's call for assistance in war work thousands of girls and women left their homes and journeyed to Washington to "help win the war." They found jobs all right and went to work. The majority of them had left pleasant homes and comfortable surroundings. When they settled down in Washington they discovered that owing to the shortage of suitable homes, they would have to make their homes in third-floor hall rooms. After the glamour of Washington had begun to wear off and the hot days began to make life anywhere a problem, some of these girls and women lost their nerve and began to think about going back home. A lot of them actually went. Something had to be done and done quickly. Heads of government departments got together to seek a solution to the problem. And there and then the United States Training Corps for Women was born.

#### MISS COCROFT SUMMONED

The war department summoned to Washington Miss Susanna Cocroft, of Chicago, celebrated the world over as a health specialist. They gave her space in the housing and health division of the war department, under Capt. Julius I. Peyser. She was one of the dollar-a-year women. They made her commander of the United States Training Corps for Women and in a surprisingly short time she was drilling some 3,500 women and girls on the big Ellipse near the White House. Regularly on Monday and Thursday afternoons the girls met for their drills. They went through military setting-up exercises. They were arranged in thirty com-

panies or three regiments. They were drilled in the school of the soldier, the school of the squad and the school of the company. They were taught to stand erect, to breathe deeply, and at the close of each drill given a ten-minute talk on health and hygiene. The girls were enthusiastic and it was declared by the department's head for whom they worked, that they did better work, were happier and more cheerful.

With the signing of the armistice thousands of these women workers left for their homes, other thousands are still there; but the benefits they derived from the few hours each day in the open air were not forgotten. They spread the gospel of good health wherever they went, and now in response to a general demand it has been decided to make the United States Training Corps for Women a nation-wide organization—to allow women the country over to share in similar benefits.

### TO ESTABLISH CAMPS

Plans have been made to establish training camps throughout the country. They will be

located in the West, the North Central states, the South and the East. They will be recreational camps and at the same time afford women and girls an opportunity to spend a vacation which will send them back to work refreshed and invigorated. Club women are interested in the movement and planning to assist it in every possible fashion. Medical men everywhere are enthusiastic over it. School boards are arranging to send their teachers to the camps that they may return and teach others in turn the valuable health lessons they have learned.

Miss Susanna Cocroft, who was the commander of the Washington camp and drilled the 3,500 women and girls there last summer, will personally superintend the exercises and health training at the recreation camps to be established by the United States Training Corps for Women. Admiral Cary T. Grayson, personal medical aid to President Wilson, is general medical director and will keep in close touch with the camps. Headquarters of the United States Training Corps for Women is

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located at 624 South Michigan Ave., Chicago, Ill., and all inquiring there will be supplied with full information regarding the opening of the camps and the time at which enrollment will occur.

Prominent personages galore are sponsoring the United States Training Corps for Women. As stated above, Admiral Cary T. Grayson, President Wilson's physician, is general medical director. Surgeon General Ireland, head of medicine and surgery of our army's fighting men, is director, as is Gen. Enoch Crowder, United States provost marshal, who engineered the draft. Several with them are such men and women as Julius Kahn, of California, chairman of the military affairs committee of the house of representatives; Philander P. Claxton, United States commissioner of education; Mrs. Robert Lansing, wife of the secretary of state; Mrs. Franklin K. Lane, wife of the secretary of the interior; Miss Mabel T. Boardman, of Red Cross fame; Mrs. Philip North Moore, of St. Louis, president of the National Council of Women; Rt. Rev. Samuel Fallows, D. D., LL.D., of Chicago; Mrs. Frederick W. Upham, Mrs. Frederick D. Countiss, and Mrs. George W. Dixon, of Chicago, while on the advisory board are Mrs. George Barnett, of Washington, D. C., Senator Irvine L. Lenroot, of Wisconsin, Hon. Norman J. Gould, of New York, Hon. Louis T. McFadden, of Pennsylvania, and Senator Robert L. Owen, of Oklahoma.

## Texas—State

Waco, April 25—The annual convention of the Texas State Dental Society, sessions of

which began here last Tuesday morning, ended Friday afternoon, with the selection of the 1920 meeting place and the election of officers. Dallas was chosen as the next convention city.

The officers elected are: President, C. E. Stephens, San Antonio; vice-presidents, G. W. Staples, Dallas, W. D. McCarty, San Antonio; secretary-treasurer, J. G. Fife, Dallas; member of the executive committee, 1920-22, W. O. Talbert, Fort Worth; chairman clinic committee, 1920-21, E. O. Ellington, Big Springs; member dental board committee, 1920-23, C. J. Hicks, Plano; delegates to house of delegates, National Dental Association, 1919-20, J. O. Hall, Waco; W. H. Scherer, Houston; J. E. Storey, Beaumont; alternates, G. W. Wiebush, Brenham; B. F. Dulany, Colorado City; T. F. Cox, Austin.

That the post-graduate plan adopted by the Oklahoma State Dental Society may be carried out, \$3,000 has been underwritten by one hundred and nine members of the Texas State Dental Society. This assures the plan for the 1920 meeting.

## Ohio—Northwestern

Lima, April 24.—At the monthly meeting of the Northwestern Ohio Dental Association, Thursday evening, a six o'clock banquet was given at the Elks' Home in honor of Dr. Henry Brunk, who recently returned from overseas. He was in the medical officers' corps and was in the fight in the Argonne, where one of the bones in his right leg was shattered. The wound is healing nicely. At the close of the

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# ANNOUNCEMENT

## To the Dental Trade:

You will be interested in knowing that we have taken over the exclusive sales agency for the chair products made by the Carmi-Lustro Co., Milwaukee, Wisconsin. All orders for same should be addressed to us after June 1, 1919.

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**Carmi Disclosing Solution:** For Disclosing Plaques, Stains and Deposits.

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Very truly,

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banquet a business session took place around the banquet table. An election of officers was held, resulting as follows: A. Jones, of Lima, president; I. W. Wright, of St. Marys, vice-president; W. J. Diamond, of Lima, secretary, and A. K. Bannister, of Lima, treasurer. Dr. Brunk then gave an interesting description of his trip across the seas, the battles in which he participated and his trip back. Dr. Bunk talked for an hour and had most attentive listeners. The next meeting will also be held in Lima.

### Ohio—Toledo Society

The Annual Clinic of the Toledo Dental Society was held on Friday, May 9th, 1919. Following is the program:

Dr. L. L. Sheffield and Dr. J. E. Sheffield, Use of compressed air in scaling and pyorrhea treatment; Dr. W. E. Miller, Removable bridgework with cast clasps; Dr. S. S. Rimers, Method of pyorrhea treatment; Dr. W. J. Dierks, Making a two-piece crown; Dr. L. E. Struble, Taking impression of bell-shaped tooth for cast clasps; Dr. L. E. Phelps, Root-canal technic.

Dinner at six o'clock, after which Chalmers J. Lyons, D.D.Sc., of Michigan University Dental School, read a short paper on "What the War Has Done for Dentistry," followed by discussion.

The meeting was well attended and very interesting.

### Dental Association Endorses Clinics

Flint, Mich., May 7.—The work being done in the city by the dental department of the board of health was heartily endorsed by the Genesee Dental Association at its recent meeting, when the following resolutions were framed and sent to the Board of Commerce, asking that that organization lend its support to the work:

"RESOLVED, that our society inform the Board of Commerce that it heartily endorses the work of the dental department of the board of health, and asks its support in the work it is endeavoring to do, especially among the school children of the city."

### South Dakota—State

Mitchell, May 7.—Dr. M. R. Hopkins, of Aberdeen, was elected president of the State Dental Society, and Sioux Falls was chosen for next year's meeting. The post-graduate plan will be tried in 1920. Other officers: Vice-president, W. H. Tweedle, Pierre; secretary, E. W. Elman, Sioux Falls; treasurer, F. V. Brown, Sioux Falls.

One hundred dollars was voted to aid French and Belgian dentists.

### Iowa—State

Des Moines, Ia., May 8.—J. W. Marsh, of Keokuk was elected to succeed C. M. Kennedy, of Des Moines as president of the Iowa State Dental Society at yesterday afternoon's session.

Other officers elected are Charles N. Booth, of Cedar Rapids, vice president; E. R. Swank, of Des Moines, secretary; and Frank Fourt, of Chariton, treasurer. The two latter are re-elections.



## Recent Patents Relating to Dentistry

- 1,293,627—Artificial denture, Frederick U. Bowers, San Francisco, Calif.
- 1,293,358—Dental laboratory instrument, James S. Davidson, Wheeling, West Virginia.
- 1,293,049—Centrifugal casting, Dimitri S. De Lavaud, New York, N. Y.
- 1,293,567—System for dental charts and making the same, Frederick L. Stanton, New York, N. Y.
- 1,293,662—Apparatus for casting cementitious material, Grosvenor Atterbury, New York, N. Y.
- 1,294,355—Dental filling and making same, Horatio A. Black, Topeka, Kan.
- 1,293,887—Broach, John Oakley, Springfield, Mass.
- 1,293,950—Clasp for plates or removable bridges, Wm. F. Shaw, Pueblo, Col.
- 1,293,998—Attachment for dental engines, Frank G. Wagner, Los Angeles, Calif.
- 1,294,423—Dental tool, Charles H. Davis, deceased, Worcester, B. D. Davis, Executrix, Boston, Mass.
- 1,294,658—Cap remover, Dodson Haslup, Grafton, W. Va.
- 1,295,433—Appliance for expressing the contents of compressible tubes, Walter Chipperfield, Great Nolmes, Eng
- 1,295,244—Constructing and connecting artificial teeth, Henry J. Warren, Bayonne, N. J.
- 1,296,429—Artificial tooth, Hugh W. Reynolds, Kendallville, Ind.
- 1,296,009—Artificial tooth attachment and making and utilizing the same, Joseph I. Richards, San Francisco, Calif.
- 1,296,140—Collapsible container, Edward O Tinsley, Brooklyn, N. Y.
- 1,296,928—Artificial tooth, Arthur N. Cross, Philadelphia, Pa.
- 1,296,643—Dental surveying apparatus, Gilbert D. Fish, New York, N. Y.
- 1,297,199—Attaching means for removable dentures, Joseph A. McAuley, West New York, N. Y.
- 1,296,846—Artificial tooth, Wm. R. Phelps Milford, Dela.
- 1,296,869—Blow torch, Leon O. Snow, Lincoln, Neb.
- 1,296,884—Collapsible tube, Edward J. Volk, Cleveland, Ohio.
- 1,297,448—Mold for making artificial teeth, Walter W. Crate, Camden, N. J.
- 1,297,561—Attaching means for dentures, Frank G. Guntner, White Plains, N. Y.
- 1,297,352—Dental tooth, Claude B. Hostetler, Ostrander, Ohio.
- 1,298,041—Toothbrush holder, James H. Harris, Ashland, Va.
- 1,298,419—Artificial tooth, Charles E. Summy, Primghar, Iowa.

Copies of above patents may be obtained for fifteen cents each, by addressing John A. Saul, Solicitor of Patents, Fendall Building, Washington, D. C.

## DEATHS

At New York City, April 18, of heart trouble, Dr. Cortez Jefferson Mapp, aged 61. He was a native of Georgia.

At Chicago, April 23, suicide by drowning, Dr. A. B. Wigginton. He was despondent over failure to regain his health after an attack of influenza.

At Lander, Wyoming, April 24, suicide by shooting, Dr. C. W. Johnstone, aged 70. Dr. Johnstone was one of the very first dentists to locate in Wyoming, being well known all over a wide section of the state. He was despondent as a result of an attack of influenza.

At Sabillasville, Md., May 3, Dr. Albert Price, of Baltimore, aged 79.

At Glen's Falls, N. Y., May 3, Dr. Arthur Henry McCann, aged about 60.

At Patterson, N. J., May 4, of heart trouble, Dr. Martin A. Whalon, aged 33.

At St. Louis, Mo., May 5, of infection incurred while treating a patient more than a year ago, Dr. Oscar Conzelman, a prominent dentist.

At a grade crossing near Columbus, Ohio, May 8, Dr. W. E. Shadrach, of Lancaster, together with two daughters, aged 12 and 8, respectively, were killed when their automobile was struck by a train. Rain on the shield and the noise of the storm that prevailed at the time, are held to have been responsible for the accident.

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The Salvation Army wants \$13,000,000 from the country at large. Already its campaign for that amount has been launched. What splendid war work the organization did all of our fighters over there most emphatically testify. They have done and will do a great work in peace. One of their mottoes is that though man may be down, he is never out. They reconstruct and uplift. They are hope-givers and setters-up of the prostrate. Help them all you can.

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If the old-fashioned fellow who was going to move out of the state if it ever adopted prohibition is still alive, will he please approach the front and inform us to what place he will move? —*Columbus Dispatch*.

## Our Children and Preparatory Schools

As far as we fathers go, Bolshevism and other radical propaganda may not seriously affect us. It is true that the "good old days" are probably over. Labor troubles will continue to increase, taxation will remain high, and there may be little decrease in the cost of living. Since the days when primitive man overcame the mastodon and other mammoth animals of prehistoric time, brute force has counted only for short periods. The man with a soul, willing to produce, has always come to the top, and he always will.

History, however, likewise shows that it is continually harder and harder for families to

## THE DENTAL SUMMARY

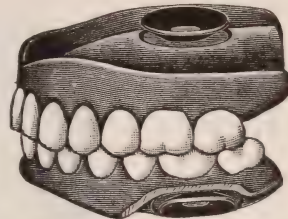
rely on special privileges, possessions and other inherited rights or property. When conflicts have arisen between the masses and men of intellect, intellect has always won; but when the conflict has been between the masses and special privilege, the masses have always won. For many centuries each generation has been less and less able to depend upon the special privileges, the "rights," and even the property which it expected to receive through inheritance.

The fortunes of us old codgers will not be greatly affected one way or the other by the social revolution which will follow this war, but the future of our children will be greatly affected thereby. Things that we had and which they could have reasonably counted upon five years ago, they cannot safely count upon today. Because we have a profitable business, a tin box full of stocks and bonds, or even great tracts of land, it does not follow that such things may be of much benefit to them. This does not mean that they are necessarily going to suffer. In fact, they may be better off under the new regime than under the present. Only the future can answer this question. I do, however, want to make the point that our children cannot safely depend upon what they are going

to get from their parents. They must depend on their own ability to produce.

I wonder if the schools which our children attend have yet caught this vision? Apparently they are still contented to teach Latin, Geometry, Greek mythology and the same old subjects which they taught when we lived in a different world. But this is not the worst of it. When the matter was recently presented to the president of a big woman's college, she remarked:

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fed out to them, there is little hope for this republic. Personally, I do not believe this is so. Whatever may or may not be the vision of the heads of certain institutions, I know that the great majority of the professors, instructors and teachers have a vision and want to help our boys and girls. I do sincerely be-

lieve that we must arouse ourselves to the seriousness of the situation. We must realize that the one cure for Bolshevism is education, an education which teaches both the poor and the rich what is worth while in this world and what is not, what makes for life and what does not.—Roger W. Babson, Wellesley Hills, Mass.

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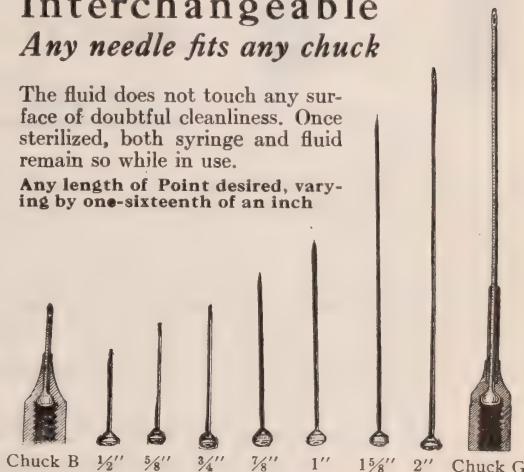
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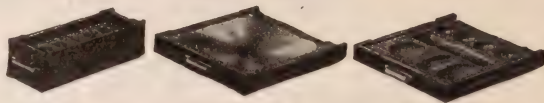
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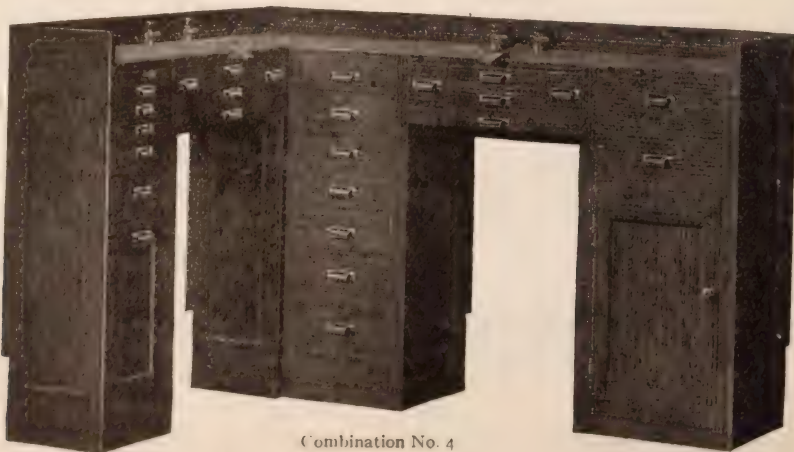
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# REGULAR CONTRIBUTIONS

## THE DENTAL SUMMARY

THE MAGAZINE THAT HELPS

Vol. XXXIX

July, 1919

No. 7

### ORAL FOCI OF INFECTION FROM A DENTIST'S STANDPOINT\*

BY H. H. SCHUHMAN, M.D., D.D.S., CHICAGO, ILL.

THE QUESTION of oral foci of infection is by no means a new one. It has been thoroughly discussed by many writers until it has become almost trite. Nevertheless, in spite of all this discussion, the wide difference of opinion that exists upon this subject is simply appalling. Why is it that no definite basis of agreement has been arrived at between the medical and dental diagnostician as to the real significance of oral foci of infection? Even at this late date some are inclined to attach very little importance to it, while others go to the opposite extreme and place the greatest significance upon it, believing that foci of infection about the roots of the teeth are the sole source of disease, to the practical exclusion of all other foci.

Such wide difference of opinion does not exist among any other branches of medicine. What is there that hinders us from obtaining some mutual understanding on this subject? The answer to this question lies in the fact that for years there has been something radically wrong in the instruction received in pathology, and the great lack of instruction in bacteriology in our colleges. As long as we possess limited information and entertain narrow points of view, we cannot hope to arrive at a scientific conclusion on this important subject. The number of physicians and dentists who are satisfied in making an empirical diagnosis gradually is declining, for they have learned that such a diagnosis generally is wrong, with the result that the treatment is usually disappointing in its result.

Not many years ago we gave very little thought to the etiology of, for example, pyorrhea alveolaris. Today we assign at least four causes to this condition. Three of these etiological factors are well known to all of you; chronic irritation due to tartar, decay and defective dental

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\*Read before the Cincinnati Dental Society, May 17th, 1919.



work, unsanitary conditions about the mouth, with resultant lodgment and putrefaction of food particles, constitutional and metabolic reactions, bacterial and parasitic causes. This latter factor the writer particularly desires to emphasize and develop. The organisms generally found in this condition are the various members of the streptococcic group, spirochæte, and also fusiform bacilli, often found in typical cases of Vincent's angina, many types of putrefactive bacilli, amœba, etc. The micro-organisms present in septic pockets are very numerous. Upon examining the superficial pus in pyorrhea pockets, we find a number of the above-named organisms present. By wiping away the superficial discharge and making a direct smear or a culture of the deeper parts, we find the streptococci and staphylococci predominating, the streptococci often being present in pure culture, either as the streptococcus viridans or the streptococcus hemolyticus type.

While it is very unlikely that any of these organisms are the specific causative agents, it is agreed generally that most of them are pathogenic, and under suitable conditions are capable of producing acute and chronic inflammation. It is of great importance always to trace focal infection and not merely to make a snap empirical diagnosis, ascribing it to some dental trouble, just because such a point of view happens to be the prevailing and fashionable viewpoint at the time. It is needless to state the utter worthlessness of any such diagnosis, made without all the substantiating evidence obtainable from laboratory findings. One must remember constantly that it is unlikely that any of the organisms mentioned ever cause local or systemic infections, unless at the same time there is some *existing abnormal condition* present, which *diminishes the resistance* to the invading organism.

In all questions involving infections it is necessary to take into consideration the fact that while various organisms, according to Vaughan, of Ann Arbor, have their individual toxins which may be more or less harmful, they all have one *common* toxin, namely, their albumose constituents, the latter being largely contained even in organisms of a saprophytic nature; and, *secondly*, we must consider the entire potentialities of the body, for they all come into play. It is therefore fallacious to confine one's investigations to a limited sphere, without giving due consideration to the entire body forces. In studying these cases it is absolutely necessary to avail oneself of all scientific knowledge and laboratory research. It is just as wrong to belong to the ultra-conservative group, who look upon this as a passing fad, as it is to belong to the overzealous class, who run every idea into the ground, simply because the opinions are based upon insufficient experimental facts. The class to which most of us belong, I am glad to state, has an open mind always on the alert for new and well-substantiated facts, and are continually guarding against unwarranted generalizations and conclusions.

We may define a focal infection as a circumscribed lesion of a bacterial nature, resulting in infection of a contiguous or noncontiguous part by the same bacteria or their toxins. From this definition it is clear that even if the presence of bacteria in a circumscribed area is demonstrated, *that of itself does by no means constitute a focus of infection.* We are all familiar with the long-established fact that bacteria may be carried about for long periods of time without creating bodily infection, and without even producing any local symptoms. For example, the organisms of diphtheria, pneumonia, spinal meningitis and many others are frequently harbored by perfectly healthy people for great lengths of time, and who are entirely ignorant of the fact that they carry organisms of such a highly-infectious nature. Whether this peculiar condition is due to the fact that the organisms present happen to be in such a state that they are harmless, or are walled off, or the host does not seem to be in a receptive state for their ill-effects, matters not. One thing we must admit, namely, that *these organisms although present in the patients do not necessarily cause local or systemic disturbances and do not constitute foci of infection.* Failure to recognize these facts will inevitably lead to much misdirected effort and to disappointing treatment.

It is important to note that in growing the organisms which interest us in the laboratory various kinds of media must be used; but for the development of streptococci only blood agar media is suitable; otherwise, the streptococcus viridans, for example, will not grow at all. In the cases that have come under the writer's observation he has obtained excellent results by using 10 c. c. of ox blood in 90 c. c. of 0.8 per cent. of agar. On this media the streptococcus viridans will appear usually after twenty-four hours' growth at body temperature, showing the characteristic small green colony.

It might be worth while to say a few words about the spirillum, which is associated with a fusiform bacillus found in large numbers in Vincent's angina. These organisms are found in normal individuals in the gingival margins around the teeth, and within the tonsils. They are sometimes found in almost pure culture in several cases of pyorrhea. Vincent's angina may progress rapidly, causing destruction of the soft tissues and alveolar process, even in patients whose teeth and gums before such infection were fairly normal. It is more often seen, however, in individuals who are careless in the care of their teeth. The condition yields readily to local treatment. The organism, together with the spirillum, can be best stained for microscopic examination by using carbol fuchsin for one minute, heating the slide gently after adding the stain.

Should an oral focus of infection actually be demonstrated, then there are two other factors that come into play before the host will suffer from constitutional derangements of any kind, namely, the bacteria or their toxins must enter the blood stream, and the local area to become



infected secondarily, *must be in such a state of lowered resistive powers* that it will receive the organisms or their toxins and permit of the further propagation of the bacteria. In other words there must be a *locus minoris resistentia*. The presence of bacteria somewhere in the oral structure, with a synchronous appearance of arthritis or endocarditis, is *by no means any evidence that one is due to the other*. It is true that under proper auspices an alveolar infection might eventually produce endocarditis; but let us not overlook the fact that alveolar infections frequently are present in the young, particularly in the children of poor districts; it nevertheless is but *very rare* that we find these children suffering from endocarditis. It would seem, therefore, definitely to associate endocarditis, or for that matter arthritis, *always* with dental foci of infection is at least very debatable.

It has been claimed that in some cases of skin diseases as, for example, eczema, oral infection has played a distinct part. Various authors have reported cases of disseminated sclerosis and iritis as probably due to this cause, without, however, giving any substantiating evidence.

About a year ago it was reported that rabbits had been injected with streptococcus viridans obtained from alveolar infections, and that these organisms had in *all* cases, and by virtue of their *peculiar selective characteristics*, attacked the serous and synovial membranes of these animals, *all* of them showing arthritis and endocarditis. The attempt was made thereby to prove that the streptococci contained in granulomas at the root ends of teeth had a very definite bearing on sequential results; namely, endocarditis and arthritis. These experiments have been widely discussed by men who lack scientific training, and who accepted these statements as facts. These experiments were made to prove the *selectivity* of organisms; in other words, when organisms were obtained from such locations as granulomas and abscesses at the apices of teeth, their introduction into the ear vein of rabbits invariably being followed by attacks by these organisms on their *synovial* membranes, shows their tissue selectivity for this particular tissue. Such findings, however, *do not prove any such fact*. It has since been found that *any* organism introduced in such manner attack the synovial membranes, producing arthritis and endocarditis and many other symptoms of sepsis.

Evidently it is not the selective action of organisms which produces these results, but it is the fact that these particular tissues are very amenable to such attacks by *any* organisms; *not* a chemotactic process between the organism and the tissue at all. Many investigators have proven repeatedly the fallacy of the selective factor, and have demonstrated the same end results, namely, arthritis and endocarditis in rabbits, by injections of bland chemicals or, as has been shown by Professor Rufus, of New York, even by the introduction of plain egg albumen. Furthermore, we all know that rabbits are particularly sus-

ceptible to the activities of streptococci, just as other animals show particular susceptibility to other organisms as, for instance, the white mouse to the pneumococcus.

Rheumatism has for a long time been ascribed by the medical profession at different periods to different organisms, and at present the etiologic factor seems to be commonly accepted to be the streptococcus viridans. The name "rheumatism" simply describes a complex of symptoms, such as arthritic disturbances, changes of temperature and involvement of all serous membranes, including that of the endocardium. The more definite information which we are obtaining from bacteriologic laboratories tends to show that some different forms of arthritis are due to specific organisms; for example, such as is found in gonorrheal arthritis, in typhoid and diphtheritic arthritis. These are classes of arthritis which certainly do not depend for their etiology on streptococcus infections, derived from oral foci, and as time progresses no doubt various other forms of arthritis will in their name be linked to proper specific organisms. It is, therefore, clear that all cases of arthritis are by no means due to the streptococcus viridans and *certainly not to those only found in oral infection.*

An infection, as we have previously stated, is a morbid bacterial process in which the organisms or their toxins have found their way into the blood stream and by a process of dissemination have established similar bacterial seats of infection in tissues, either contiguous or non-contiguous. It would seem, however, that when we speak of infections we usually refer to the absorption of bacteria and only seldom refer to what is at least as important, namely, toxemia, due to the general toxin contained by all organisms. Evidently the dividing line between endo- and exo-toxins cannot be drawn too definitely. Toxemia refers to the absorption of bacterial poison. It is not necessary, therefore, for a secondary infection to take place, that bacteria must be transferred from one situation to another, but the harmful results of same may be due to their general toxin. This is equally true of saprophytic organisms. Organisms may do their harm directly to the tissues, or their toxins may *so hinder the defensive powers of the body* as to permit or invite the future attacks of organisms from an entirely different source.

The whole surrounding media of the hormones of the internal glands may thus be changed by the results of toxic infection; and as our antibody production is in a large measure dependent upon the proper activity of these hormones, it may be much decreased by such effects. *These toxins do not necessarily have to come from oral foci of infection, as there are many other sites of possible foci of infection which may produce just such toxins.* This may account for some of the obscure cases of arthritis which are produced by toxins lowering the resistive power of the



serous and synovial membranes, so that bacterial invasion from the same or from still another source is invited.

Naturally, deep-seated infections and general sepsis must have their cause in some localized infection somewhere in the body. The same is true of general toxemia. We might mention aside from the dental regions, however, many others, such as otitis media, pyelitis, tubercular processes, intestinal disturbances, all of which may be due to some other local process or to a toxemia indirectly responsible and due to some other local infection.

There are so many angles to this question that it seems astonishing that so much stress should have been laid upon dental infections in particular, when in reality if we consider these in particular they should, according to all scientific reasoning, be even less apt to be the etiologic seat of such secondary infections for which they usually are blamed. Particularly in small granulomas at the end of a tooth root we find bacteria contained in a very small, thick, fibrous sac, surrounded for months and sometimes for years by their own offal, with very little fresh nutrient material, almost entirely walled off. We know nothing about the fluid content as regards alkalinity, or glycogen content, data which are of the greatest importance if the virility of the organism is to be considered. We know nothing of the virility of the organisms as to their power to traverse the thick envelopes of fibrous tissue. If it is a fact that these organisms are really pathogenic, due to their specific toxin, and are constantly and slowly piercing the fibrous wall and gaining access to the blood stream, would we not, by such frequent gradual infiltrations, be justified in the belief that such an osmosis would tend to produce a high degree of tolerance, inasmuch as this gradual invasion of bacteria would act much like the very best sort of vaccine? As you see, there are a great many vital questions to be considered, and to follow blindly new theories without investigations should not be the road for the scientifically-developed mind to travel. There are many other avenues of secondary infection which rarely are thought of, such as the results of infection from eruptive fevers. If it is definitely determined that the source of a morbid state lies in a certain focus of infection let it be our duty, and that of the physician, to locate that source and not ascribe it to a certain locality, merely because the prevailing idea happens to ascribe most diseases to a bacterial infection from a certain localized area.

In the young, tonsillar and middle-ear infections surely play a great role in the general status of health, and there again the mere presence of organisms is in nowise proof that these situations are the sites of focal infection. We find in children frequently, and in adults also, for that matter, at times a large increase in colon bacilli. Does that mean a focus of infection? No; it is even desirable that these colon bacilli be present in their proper location. We know that middle-ear infections may be present for a long time without causing the slightest local or

constitutional trouble. Thus, streptococci and diphtheria bacilli, as well as a large number of other pathogenic organisms, may be present for weeks and even years without causing any ill-effects.

It would seem to the writer that in order to arrive at some sane avenue of approach to scientifically investigate the matter of oral infection and its consequences, we are obliged to view the matter from two widely different avenues of bacterial location. Namely, the one a filth condition about the teeth caused by unhygienic neglect, or a result of pyorrheal infection; in other words, an *open infectious area* from which the bacterial infection easily can spread to adjacent tissues, such as the tonsils, nasopharynx and alimentary tract, and readily can cause invasion of bacteria with consequential albumose poisoning. And the *other*, that condition found at times at the root ends of teeth where bacteria are supposed to be in granulomatous tissue about the apices of devitalized teeth; and this again, in the writer's opinion, should be definitely sub-divided into two classes, namely, *one* showing a very slight area of radio translucency, and the *other* a large area of that sort which to the writer's mind would indicate a definitely-spreading, invasive infection of a pathogenic nature; and in this category the writer would include such spreading infections which at times are seen at the apices of devitalized teeth, reaching into the antrum or into the inferior dental canal, these later unquestionably being dangerous seats of infection.

As far as the writer's clinical observation goes, he is forced to admit that the greatest number of those spontaneous cures with which he has become acquainted, were achieved by the prophylactic treatment or extraction of such teeth as are enumerated in the first category, where secondary infection resulting from the local filth condition has followed, and where the infection has occurred on the basis of a toxemia, due to albumose, but he has found that in such cases where devitalized root apices were supposed to be at fault, very little constitutional benefit followed either extraction or treatment.

Considered from a bacteriologic or biologic viewpoint, the writer is at this time not at all convinced that these areas commonly called infected, merely because they show radio translucent areas, always are infectious or that organisms of harmful influence are at all times even present. Obviously these translucent areas may be produced by many agencies other than bacteria. The use of arsenical applications to a pulp, or the introduction of coagulating substances, commonly used in treatment, such as formaldehyde, easily might coagulate the lymph in the lymph spaces about these root ends and produce these radio translucent areas without meaning an infection at all; further, the method by which the harmful bacterial invasion would necessarily have to take place from these granulomas is one which the writer is not ready to generally admit at this time.



True, we hear of many spontaneous beneficial results from tooth extraction in many suspected cases; but the writer has seen also many instances in which teeth were removed without any constitutional benefit whatever following such procedure. If cases are presented where oral foci of infection actually are shown to be the cause of the secondary infection, or where all other sources of infection have been ruled out, and only as a matter of last resort these suspected areas are to be removed for the benefit of general health by extraction of the teeth suspected, then let it be understood that the mere removal of the teeth, followed by a slight careless scarification with a curette is not at all sufficient to produce the desired results, but the operation must be concluded by vigorous surgical interference, such as properly cutting away any diseased bone and all granulomatous tissue that may have been suspected to be present through the X-ray examination. Many of these so-called granulomas which have been the cause of removal of many teeth, can and have been treated with the result that later pictures showed these areas completely healed, or on the way to be completely healed.

The ruthless unscientific extraction of teeth is entirely inadvisable, in the estimation of the writer. Much more beneficial clinical results have been obtained in the cleaning up of superficial infections, such as are found in unclean mouths, which are due to neglect or to pyorrhea, by simple prophylactic measures, than are found as the result of extraction after diagnosis of root infection. I am reminded of a case under observation in our Chicago laboratories at the present time, where a woman of about thirty-five years of age, suffering from arthritis, was advised to undergo prophylactic treatment; and a blood examination showed before treatment:

Erythrocytes.....	500,000
Leucocytes.....	13,000
Hemoglobin.....	.90
Color Index.....	.8
Polymorphonuclear.....	58%
Small Mononuclear.....	37%
Large Mononuclear.....	3%
Transitional.....	
Eosinophiles.....	2%
Basophiles.....	

Red cells normal in shape and size. Stain well.

and after treatment:

Erythrocytes.....	5,400,000
Leucocytes.....	730,000
Hemoglobin.....	1%
Color Index.....	1%

Polymorphonuclear.....	68%
Small Mononuclear.....	26%
Large Mononuclear.....	4%
Transitional.....	1%
Eosinophiles.....	1%

This woman had her teeth X-rayed, and no less than eight teeth were found with radio-translucent areas, and, notwithstanding the fact that she only received local ordinary prophylactic treatment, and that nothing whatever, up to the present, at least, has been done to overcome any possible infection from the so-called granulomas, her improvement in the examination as far as blood differential was concerned, you will readily see was certainly striking; in fact, is now almost normal; and I fail to see that any further great improvement is to be expected following the treatment of these root apices as far as the blood picture is concerned. Her rheumatic condition has improved greatly and has almost disappeared. It should be mentioned, however that she recently has undergone profuse eliminative treatment.

This is one of those cases where possibly the rheumatic condition may have been due to oral sepsis; not to any particular organism, but to a general albumin poisoning, for the organisms thus removed certainly were not of so infectious a nature as to locate as such in other surroundings and there set up their virulent activities. If they had been, the late removal of the original seat of infection hardly would have been sufficient to eradicate them in their new location nor benefit the blood picture. I believe that in such cases a low-grade poisoning of albumoses is established, and that activities of antibody production is so hindered as to allow deleterious bodily influences to work havoc without any direct infection spreading from the original source of disease. This toxemia being removed, allows the bodily functions to return to normal, and the disappearance of arthritic symptoms readily might be expected to follow.

A sequential disease should be traced to its proper source in a thoroughly scientific manner before pronouncing the final diagnosis.

It also should be determined as to which of the two infections was first present. A synchronous existence of two disturbances does in no way prove that one was dependent on the other; they may both or either one have been caused by a third bacterium or toxin, and therefore may be entirely independent occurrences.

We are all seeking the truth and that can only be obtained by true scientific study, entirely unbiased by prevailing opinions.

25 East Washington Street.



## ULCERATIVE GINGIVITIS DUE TO VINCENT'S ORGANISMS\*

BY EDWARD B. LODGE, CAPTAIN D. C., A. E. F.

**I**N ARMY DENTAL PRACTICE a condition is encountered with some frequency which in civil practice is found only as a rare disease. I refer to ulcerative gingivitis due to infection with Vincent's organisms. This disease is loosely spoken of as Vincent's angina, and it is identical with the so-called "trench mouth." Vincent's angina is an acute inflammation of the throat which usually attacks the tonsils, although it may involve the pharynx and other tissues, and because it tends to produce a choking or suffocating sensation it is an angina. This infection may or may not spread to the gums and conversely the gums may be the site of original infection which may or may not later involve the tonsils. Gingivitis from this infection especially interests us as dentists.

This disease whatever structures are involved is, like diphtheria, characterized by a pseudo-membrane which follows shortly after its inception, and at a later stage the ulcerations take on a "punched out" appearance. Due to this condition it is sometimes clinically diagnosed as syphilis. Unlike diphtheria and syphilis this disease usually responds readily to local treatment.

Prior to 1894, the etiology of this infection was obscure; but in that year Plaut is credited with having made uniform bacterial findings, and in 1896, Vincent, and in 1898, Bull, were credited with similar results. They found a bacillus and a spirillum in smears taken from these inflamed areas. The bacillus being pointed at both ends is a fusiform bacillus, and the spirillum closely resembles the spirochæte of relapsing fever.

Since the two forms usually have been found growing together in this disease, they were, until recently, believed to be distinct organisms, living in symbiosis. In 1906, Tunncliff made the claim that the two forms are one and the same organism in two stages of development. Tunncliff was able to grow the organisms on slants of ascitic agar at a temperature of 37.5 degrees C.; and during the first five days only the bacilli were present, after which the spiral forms appeared in great numbers. It was due to this observation that Tunncliff believed that the spirochæte was an adult form of the fusiform bacillus. This organism has a length varying from 3 to 10 micra, and a width of 0.5 to 0.8 of a micron. They are thickest in the center, and taper toward the ends,

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\*Read before the American Dental Club, Paris, France, April 8, 1919

either to a point or to a blunt end. The spirilla are longer than the bacilli and their undulations readily are distinguished from other species.

Like the diphtheria bacillus, these organisms stain readily in methylene blue, carbol fuchsin, or Giemsa's stain; but are said to be decolorized by the Gram method. Banded variations are seen in the center of the fusiform bacillus, and these take the stain more readily at their ends. The stained and unstained areas in the center resemble the staining qualities of the diphtheria bacillus.

Patients presenting with this infection usually complain that they cannot eat. Sometimes there is a fever and there may be rigors and insomnia. Acute pain is felt on moderate pressure and profuse bleeding from the most trivial causes are characteristic symptoms. In addition to these is a fetor of the breath, which is quite distinctive. The pseudomembrane always seems to be present when the lesion is fully matured.

Differential diagnosis must be made from diphtheria, syphilis, tuberculosis, gonorrhea, stomatitis and pyorrhea.

#### TREATMENT

Some of the remedies which have been employed are as follows: Mercuric chlorid, 1 to 10,000, in 4 per cent. boric acid solution. Salvarsan in sesame oil, suspended by the aid of iodopia (Merck). This is injected into the pockets and applied to the gums, and is recommended by Lederer. Some claim good results with a solution of sulphate of copper. Others recommend Fowler's solution, applied locally and internally. Vaughn recommends silver nitrate, 4 to 8 per cent. or argyrol full strength, a light diet and cathartics. The writer has attained very gratifying results by the use of  $H_2O_2$ , followed with tincture iodine and later by supplementing this treatment with trichloroacetic acid.

In detail the treatment is as follows: Full strength  $H_2O_2$  is either sprayed or applied by means of pledgets of cotton to the ulcerated tissues. This then is followed by a free use of tincture iodine full strength, applied by small pledgets of cotton. Usually scaling of salivary calculus is found necessary and some of this work usually is accomplished at the first sitting. The patient is given an antiseptic mouth wash and is asked to report the following day.

At the subsequent sittings, which are daily, the same treatment is carried out, always accomplishing as much prophylaxis as conditions will warrant. An improvement is noticeable usually from the second treatment. As soon as the extreme tenderness has subsided the patient is shown how he can promote his cure by gentle massage with the ball of the finger. This treatment is explained to the patient in the chair and a demonstration is given, and the patient requested to follow it up himself several times per day. The antiseptic wash employed by the writer in army practice usually has been Dobell's solution. This was



used principally because it was something that always was available. This antiseptic was prescribed to be used full strength every three or four hours and to be held in the mouth for at least thirty full seconds at a time. An antiseptic known as sulpho-carbolate of zinc, 10 per cent. solution in cinnamon water, cudbear to color, is a favorite remedy with the writer. This was introduced into dental practice by Dr. Wm. H. Whitslar, of Cleveland, some years ago. It is an astringent, stimulant, antiseptic and is a very valuable contribution. This remedy is not only indicated in pyorrhea but is well suited to the treatment of the disease under consideration.

At the end of a few day's time if the pseudo-membranes persist in the interproximal spaces, they respond remarkably by touching up with trichloroacetic acid. This may be applied on very small pledgets of cotton tightly rolled and placed upon the necrotic tissue to produce its escharotic effect. It is well to place a cotton roll on both lingual and labial sides of the teeth to absorb the moisture, thereby preventing unnecessary spreading of the drug.

Among the predisposing causes of Vincent's infection of the gums are in the opinion of the writer, irregularities of the teeth and lack of ordinary brushing. There also may be calcareous deposits and faulty crowns, bridges and fillings. It is not possible to say that the fusiform bacillus and the spirochæte of Vincent are the primary invaders in this lesion, since they always are accompanied by staphylococci and streptococci as well as other organisms which may have prepared the soil for the Vincent's organisms as secondary invaders. The disease is believed by some to be highly infectious, but without predisposing causes previously mentioned the writer is disposed to doubt this feature. It is well known that these organisms are found in the normal mouth. Lieut. Bachman, D. C., recently has told me of approximately two hundred and fifty patients of the Cooke County Hospital being examined for these organisms; and that in practically all, the fusiform bacillus and the Vincent's spirochæte were found. When the disease is present, however, they are found in vastly greater numbers.

In Camp Sherman, in 1917, the writer made observations of thirteen cases to ascertain if possible whether or not they were coming from any particular part of the camp. There were then over thirty thousand men in the cantonment. It was found that there were scarcely two from any one regiment. On the other hand, I recently have had a patient in the person of a medical officer, who told me that of seven officers living together, he was one of four who had Vincent's infection of the gums all about the same time. It may be of some interest to know that for the months of November, December, January and February, just passed, that the writer had patients as follows:

Nov., 1918, patients 208, of which there were of ulcerative gingivitis from Vincent's Organisms.....	5
Dec., 1918, patients 112, of which there were of ulcerative gingivitis from Vincent's organisms.....	3
Jan., 1919, patients 87, of which there were of ulcerative gingivitis from Vincent's organisms.....	4
Feb., 1919, patients 108, of which there were of ulcerative gingivitis from Vincent's organisms.....	9

Total patients, 515

About 4.2%      Total, 21

All were without exception checked up by the bacteriological laboratory, and reports were invariably to the effect that the fusiform bacillus and Vincent's spirochæte were present in more than ordinary numbers.  
Cleveland, Ohio.

## NEW ROOT FILLING

BY W. CLYDE DAVIS, M.D., D.D.S., LINCOLN, NEB.

DEAN COLLEGE OF DENTISTRY, UNIVERSITY OF NEBRASKA

I desire to inform the profession of a new combination of the fluid part of a root filling. This preparation has all the advantages found in former combinations and most of the faults eliminated. The material is prepared as follows:

Chloroform.....	1½ drams
Rubber (pure gum).....	4 grains
Rosin.....	16 grains
Di-thymol Di-iodid.....	4 grains

These should be combined and allowed to stand for twenty-four hours, then add one-half dram eucalyptol. By a careful study of the properties of each one of these ingredients I believe the material will meet with favor.

The chloroform is the main solvent. The pure rubber gum is that which is called raw rubber and can be had at any automobile tire repair shop. This amount of rubber assists in the formation of a protecting skin to prevent evaporation, which is one of the virtues of the Callahan varnish. It will be noted that the rosin in this preparation is much heavier than with the Callahan varnish. This is made possible by the presence of eucalyptol which prevents rapid evaporation of the chloroform. The eucalyptol also has the property of raising the moisture from the sides of the canal, provided by accident the canal is not entirely dry.

In the use of this preparation the finest point can be pushed entirely to place before the chloroform has sufficiently weakened the point to cause it to bend. Within a minute or two this point will have been sufficiently disintegrated to cause it to bend, so as to prevent the accident of pushing the same too far through the root canal.



The uses of the di-thymol di-iodid are apparent. This also assists the radiographer, for when a root canal has been filled with this preparation the roentgenogram will show when a root canal has been imperfectly filled, as the point will show white. The part which has been filled with this fluid only will show gray and that part of the canal which has not been filled with either will show dark. This is a most valued fact in the use of this preparation as all root canals should be filled with gutta percha, sealed with a sealing fluid. This preparation will be found most adhesive and can not be removed from a wet surface except by the use of a solvent.

All the materials are easily obtained by any dentist and are inexpensive. The percentage of sore teeth following the placing of a root filling is much less than with any other preparation we ever have used.

Before using, all canals should be flooded with eucalyptol, then excess absorbed out so that the walls are only damp with eucalyptol.

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### Trench Mouth

Trench mouth, which has been rather prevalent among the men in the army, is another name for Vincent's angina.

Early diagnosis of this disease is of vast importance, for otherwise great destruction may take place. Once you are certain of the diagnosis, thorough curetting of all necrotic tissue should be done and all irritants removed. Diet and bowels regulated as in stomatitis, and alcohol and tobacco prohibited.

Personally I have had the greatest success in the treatment of these cases with the local application of copper sulphate in a 2 per cent. solution, applying it daily and having the patient use a  $\frac{1}{2}$  per cent. solution of permanganate of potash every two or three hours as a mouth wash.

Salvarsan in glycerine, a 10 per cent. emulsion, locally applied, has been highly recommended.

Chaufford and Blair claim to have gotten excellent results by using the basic aniline dyes, methylene blue or violet, applied dry on a cotton swab. The application being made daily until all inflammation subsides, after which it is continued at gradually lengthening intervals for several weeks.

The disease is very stubborn, often lasting for weeks, and the patient should be kept under observation for a month or two after all signs of inflammation have been dispelled.—*R. A. Albray, N. J. Dental Journal.*

## TECHNIC FOR THE REMOVAL OF DEAD TEETH\*

BY JOSEF NOVITZKY, D.D.S., SAN FRANCISCO, CALIF.

SINCE 1915 I have been persistently maintaining that every devitalized or pulpless tooth is in every sense of the word a dead tooth, and that every dead tooth, no matter how or by whom it is treated, will be found to be infected six months after devitalization.<sup>1</sup> This has been demonstrated and proved scientifically. I have pointed out how dead lower molars caused inferior dental canal infections with drainage from the inferior dental foramen, which resulted in tonsillar phlegmons, Ludwig's angina, and Bell's palsy; how dead upper molars frequently resulted in septic collections under the antral membrane or direct perforation of the antrum of Highmore; and how septic granulations which often remained after a dead tooth was extracted resulted in a low grade suppuration with dangerous systemic sequela and such absorption of alveolar process as to render it very difficult to insert a satisfactory plate.

I have demonstrated many times the necessity of removing dead teeth by surgical operation rather than by the old method of extraction, and I have outlined the technic of the operation. A more detailed account of this technic would have been fruitless on account of the universal discredit which was accorded my work. Of late, however, the truth of my findings has been recognized rather widely in the ranks of the medical and dental professions in spite of the stubborn opposition of college heads, who still complacently teach their charges to kill teeth, to treat and fill the dead bodies, and to leave them in mouths as certain sources of infection and putrefaction. Dental journals have been giving expression and support to ideas appropriated from my published articles, although only one writer, Dr. John S. Marshall, has accorded

\*Anatomical work done in the Surgical Pathological Laboratories of Leland Stanford, Jr. University.

<sup>1</sup>*Pacific Dental Gazette*, May, 1915.

Transactions of the Panama-Pacific Dental Congress, August-September, 1915.

*California State Journal of Medicine*, November, 1915.

*Pacific Dental Gazette*, February, 1917.

*Journal of the California State Dental Association*, November-December, 1917.

*American Journal of Surgery*, August-September, 1917.

*Dental Items of Interest*, January, 1918.

*American Journal of Surgery*, March, 1918.

*New York Medical Journal*, March 23, 1918.

*Journal of the California State Dental Association*, June, 1918.

*Journal of the National Dental Association*, June, 1918.

*California State Journal of Medicine*, November, 1918.

*California State Journal of Medicine*, December, 1918.

*American Journal of Surgery*, February, 1919.

*New York Medical Review of Reviews*, February, 1919.

THE DENTAL SUMMARY, June, 1919.

An abstract to be published in the *Southern Medical Journal*.



me a word of credit or commendation. It seems, then, that a more detailed explanation of the technic of my operation might at this time be desirable.

Briefly, the operation which I have been advocating is as follows:

A triangular flap of the gum and periosteum with its apex at the gingival margin of the necrotic tooth is raised and pulled back so as to expose the outer plate of bone for a little more than the length of the root. Or, if more space is needed for operating, it may be necessary to strip down the gums and periosteum from the healthy tooth on each side of the necrotic one. In this second case the gums must be carefully sutured back to their original position at the end of the operation.

Part of the outer plate of bone is removed with a chisel so as to expose the cancellous bone and the tooth root. If the part of the buccal plate which is removed does not extend so far as the end of the tooth root, the tooth is hooked out sidewise before apical exploration and curetting.

The tooth may be hooked out either before or after apical exploration and curetting, if the part of the buccal plate over the entire root length is removed.

When a cavity is discovered beneath the tooth roots, the tooth and alveolar septum in multirooted teeth are removed with the chisel.

When the antrum is affected, the inner plate of bone in the upper jaw may be cut away enough to permit the inner flap of mucous membrane and periosteum to be drawn over to meet the outer flap. But ordinarily the inner plate should be left intact, for when both plates are removed bone regeneration does not take place in the inner plate so well as in the outer.

Antrum incisions are sutured. The cavity is drained through the natural ostium into the nose. The antrum is not packed with gauze unless hemorrhage is excessive. If necessary, the cavity may be irrigated five or six days after the operation. Thorough irrigating may be done by means of a canula inserted through the flap from the mouth or through the thin plate of bone under the inferior turbinate of the nose.

The operation may be performed under novocain anesthesia with no pain to the patient and very little shock.

The operation for the removal of dead teeth and surrounding areas of infection is described more specifically by the following illustrations.

*Fig. 1*, indicates the lines of incision in the operation for the removal of the upper first molar. The incision should allow a generous margin of mucous membrane and periosteum at *A*. This obviates post-operative recession of the soft tissues from about the necks of the teeth on both sides of the operative wound.

At *B*, are shown the terminals of the lines of incision. These may be extended out anteriorly and posteriorly if complications not anticipated prior to the operation make a larger approach necessary. The

incision as shown is ample for the removal of the tooth and necrotic alveolar process and for exploration of the antrum floor immediately above the root ends.

After the incision is made the gingival edge of the flap (C) is pared so as to leave a freshly-cut surface to be sutured to the lingual side of the wound after the operation is completed. The periosteum and soft tissues composing the flap are lifted free of the bone and held back with a retractor.



Fig. 1

The outer plate of process overlying the buccal roots is outlined with chisel and gouge and removed in one piece. This leaves the buccal roots exposed *in situ* in the alveolar process. A smart tap with the mallet and chisel will crack each buccal root free from the tooth crown and permit it to be hooked out sidewise. The tooth crown is now still in position, held only by the long lingual root. The apical region of the buccal roots is now curetted and examined for perforations into the antrum. Hemorrhage at this stage of the operation should be under control so that direct access and vision will permit thorough work.

If no perforation is found leading from the buccal roots, the side of the lingual socket next to them is enlarged with the gouge before the tooth and the remaining root is elevated from its socket. If a lingual perforation is found, the alveolar process may be lifted away from the antrum membrane so as to allow the membrane to remain intact, if this is desirable. Pus or exudate from dead teeth frequently drains through the thin floor without perforating the membrane. In such cases the membrane will be found thick and fibrous, far different from the normal condition. Polypoid tissue involving the antrum cavity often will be found immediately above the dead roots.



After the infected granulation tissue and necrotic debris have been thoroughly removed, the edges of the opening in the bone are smoothed with the chisel or curette, for sharp bone edges are not conducive to rapid post-operative repair. Finally, the periosteal flap (C) is sutured to the inner margin of the mucous membrane.

Gauze packings never should be used in this work except as mechanical blocks to hemorrhage.

Associated with chronic changes emanating from dead teeth in some cases will be found diffuse infection in the Haversian bone. In such cases a gutta-percha cigarette drain will allow serum and discharges to escape until the time arrives to close the wound.

When extensive surgical work on the antrum seems to be necessary, the incision should take in several teeth on the affected side. The tissues should be stripped back from both vital and dead teeth in order that there may be adequate space for operating. Antrum cases I am covering separately in a special paper on my operation on the antrum of Highmore.

It should be distinctly understood that an operation for the removal of an upper molar and the exploration of the antrum or antrum floor calls for surgical training and experience. Such training and experience cannot be gained in the dental college in which staid professors shamelessly teach young men to kill teeth and to treat and fill the dead bodies in spite of the most convincing proofs of the dangers of such practice.

Fig. 2, indicates the lines of incision (A) for the removal of a lower right second bicuspid. The flap of mucous membrane and periosteum is seen at B. At C is shown the root of the bicuspid after the outer plate of the mandible overlying it has been removed. The tooth is now ready to be removed sidewise through the opening made in the outer plate.

Fig. 3, shows the tooth socket after the tooth has been removed. There is now direct access to the pathological cavity at A. This cavity communicates with the inferior dental canal.<sup>2</sup> At B, will be seen the stretched and tightly adherent membrane surrounding the orifice of the mental foramen, inclosing the nerve and blood vessels in its sheath.

The large incision and the stripping back of the soft structures over the vital roots anterior to the second bicuspid are necessary to allow careful dissection and the stripping back of structures surrounding the mental foramen. This makes it possible to work without severing the mental nerve or blood vessels. Commonly it is necessary to pick away bone forming the wall of the inferior dental canal in order to remove structures which are no longer normal. These, if allowed to remain, will continue a low-grade suppuration resulting in atrophy of the surrounding bony parts and also in secondary metastatic sequela.

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<sup>2</sup>See my article in the *Pacific Dental Gazette*, May, 1915, in which was pointed out for the first time inferior dental canal infections emanating from septic teeth.



Fig. 2



Fig. 3



At the end of the operation the gums must be approximated to their original position and sutured.

In various addresses and articles, some as early as 1915, I have called attention to the fact that septic retention following incomplete surgery many times results in absorption of alveolar process and a flattening of the alveolar ridge which make it very difficult to construct a suitable denture.<sup>3</sup>

In one of my addresses I exhibited plaster models demonstrating this fact.<sup>4</sup>

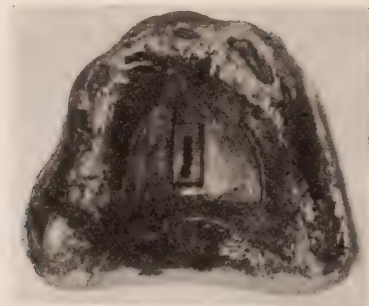


Fig. 4

This is a plaster model of a mouth in which septic teeth on the left were "pulled." On the right and the anterior portion septic teeth were removed by dissection, also a radical operation on the right antrum was performed. Witness the result: On the left the alveolar ridge has become obliterated through resorption as a result of incomplete surgery and septic retention; on the right rapid healing with some callus formation has followed thorough surgery. Problems of future plate work for mastication of food are simplified by thorough surgery.

Fig. 4, is a photograph of one of these models. *The Pacific Dental Gazette* for May, 1919, gives space to an article which makes a special point of claiming for its author originality in this matter. This would be rather amusing if it were known that the claimant brought his wife to me for surgical advice and that I reported the case in the *American Journal of Surgery* for August and September, 1917.<sup>5</sup> Here attention was called to the loss of Haversian bone and to the atrophy of marginal ridges resulting from incomplete surgery. The claim for originality would appear even more amusing if it were generally known that the editor of the magazine in which it was given the most prominent place had already published one of my papers from which it was borrowed and had once refused to publish a paper of mine unless I would substi-

<sup>3</sup> *California State Journal of Medicine*, November, 1915.

Transactions of the Panama-Pacific Dental Congress, August-September, 1915.

*The Pacific Dental Gazette*, February, 1917.

*American Journal of Surgery*, August-September, 1917.

*Journal of the California State Dental Association*, November-December, 1917.

*New York Medical Journal*, March 23, 1918.

<sup>4</sup> San Francisco District Dental Society, October 8, 1917.

<sup>5</sup> See Slide 24, *American Journal of Surgery*, August-September, 1917.

tute the word "devitalized" for the word "dead," his plea being that he wished to keep dental literature up to a high ethical standard.

For the photographs of my anatomical work in this article I am indebted to Dr. F. E. Blaisdell, professor of surgery in the medical department of Leland Stanford, Jr. University, to whom I also owe much invaluable guidance and assistance in the research work that has been instituted.

Head Building.

### WHAT ART MEANS TO ME

I feel within an impulse, perhaps that divine impulse which has moved all races, in all ages and in all climes, to record in enduring form the emotions that stir within.

I may model these emotions in clay, carve them in wood, hew them in stone, or forge them in steel; I may weave them in textiles, paint them on canvas, or voice them in song; but whichever I do I must harken always to the song of the lark and the melody of the forest and stream and respond to the color of the rose and the structure of the lily, so that my creation may be in accord with God's laws and the universal laws of order, perfect fitness and harmony.

Moreover, I must make my creation good and honest and true, so that it may be a credit to me and live after I am dead, revealing to others something of the pleasure which I found in its making.

Then will my creation be art whether I be poet or painter, blacksmith or cobbler, for I shall have labored honestly and lovingly in the realization of an ideal.—

*C. Valentine Kirby.*



## A PLEA FOR CLOSER RELATIONSHIP BETWEEN THE DENTIST AND THE PHYSICIAN\*

BY CHARLES W. MCGAVRAN, M.D., COLUMBUS, OHIO

**W**HEN YOUR CHAIRMAN favored me by asking me to appear here this evening with a paper, I of course asked myself what would be my subject. The answer to this question came immediately. It would be a plea for a better understanding and a closer relationship between the dentist and the physician.

The time has come when the careful physician, upon examining a patient and finding a heart lesion, a prematurely-hardened artery, a grave anemia, a disturbed joint or as is more often the case a polyarthrititis, a purpura, or other evidence of infection, if he does justice to his patient, must turn and *ask why*.

In other words if he expects to obtain results and be of any real help to the patient, he must strive for an etiologic diagnosis. In the management of disease the etiology is the all-important factor to be considered.

From my very pleasant association with many of the dental profession, I am also led to believe that the careful dentist, no longer is satisfied to tell the patient with a mouth full of gold, no local symptoms and no open cavities, that his teeth are in good condition and that he needs no further examination.

In the medical world the question of focal infection has been heralded around the globe. For the past five years we scarcely have been able to find a live number of any medical journal which does not touch on this very important subject.

When the physician finds a case of arthritis, of arteritis, of endocarditis, of blood dyscrasia, he knows that there must have been some focus of infection, either acute or chronic, some portal of entry, from which the infection entered the system and was carried to the parts, remote from that focus. It is sometimes the case, but not often, that this area may have been an open wound, such as a compound fracture, gunshot or stab wound. Systemic disturbances following these wounds when they do occur, are more prone to be very acute, severe and quite often fatal.

There is another type of disturbance, which is usually of long duration, slowly progressive, with periods of remissions and exacerbations which points directly towards a focus of infection, and relief is not to be had till this focus has been found and removed.

In a given case the diagnostician has the following points to which his attention must be given, and each one must be considered separ-

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\*Read before the Columbus Dental Society, May 27, 1919.

ately and all collectively, as any one or more of these may be the focus or foci giving rise to the trouble.

*First*, the nose, throat and ears, including the nares, the sinuses, the tonsils, the peritonsillar tissue, the eustachian tubes, the middle ears and the mastoids.

*Second*, the thorax, particularly the lungs and mediastinum.

*Third*, gastro-intestinal canal, abdominal stasis, gall-bladder, appendix and anus.

*Fourth*, the genito-urinary system.

*Fifth*, any wound or area of induration of long standing.

*Sixth*, the teeth.

In searching for the focus, the physician has to do with each of the above-mentioned systems and conditions, and can not consider his work at an end till he has either found the focus or gone thoroughly over each one.

There is one thing of which he may be absolutely sure, and that is, when he finds any of the conditions mentioned at the beginning of this article, there must be a focus somewhere from which organisms have gained entrance to the system.

The question of toxæmia or bacteremia is one still in dispute, but the work of Roseneau and others seems to prove that not only do the toxins gain entrance into the system, but also the bacteria and that we really have to do with a bacteremia.

This theory is also held by Klotz, who in his extensive research in the vascular system, has shown that there is an actual invasion of the *media* by the organisms.

It does not fall within the scope of this paper to enter into the detail of blood-vessel pathology save to say that it has been definitely proven that bacteria gaining entrance to the blood-stream are carried through the smaller vessels, the vaso-vasorium, to the media, the middle coat of the arterial wall (this coat which has everything to do with the strength of the vessel) and produce a condition known as Mesarteritis, and is a big factor in the production of the arterial changes which are so common and so difficult to manage.

Tonight we will lay aside the first five areas, as mentioned above, as being the possible areas where foci of infection might be found and deal with the sixth, the teeth.

There are two angles from which the medical man must view the teeth. *First*, from the standpoint of chewing surface and *second*, from that of infection.

In September, 1916, the writer reported one hundred cases of arterio sclerosis to the Columbus Academy of Medicine, in which he analyzed the histories and physical findings, paying especial attention to etiology. These cases ranged from twenty to eighty years of age, 85 per cent. being between the ages of forty and seventy, and more being between the ages



of fifty and sixty than any other decade. It was found that only 35 per cent. had adequate chewing surfaces, this included those with artificial teeth, while 60 per cent. had poor or very little chewing surfaces and 5 per cent. had no chewing surface at all.

These observations were made between the years 1906 and 1916, and the writer regrets to say that at that time, especially during the first few years of this period, he was not paying particular attention to the areas of infection about the mouth, and I dare say that a large percentage of these cases had areas of infection about the teeth.

As it was 23 per cent. of this series of cases gave a history of previous infectious disease, such as typhoid fever, rheumatic fever, erysipelas, pneumonia, or chronic suppurative process some where. At that time the author was paying particular attention to the effects upon the gastrointestinal canal of improper mastication, and it was shown that proper mastication was out of the question in 65 per cent. of these cases.

I still maintain that improper mastication is a very great factor in the production of gastro-intestinal disturbances, and that these disturbances are productive of gastro-intestinal toxemias which have a great bearing upon general systemic disturbances. And while it is the second condition, focal infection, that I wish to emphasize tonight, I wish to go on record as being a firm believer in, and an urgent advocator of, adequate chewing surfaces in every case, thereby making proper mastication possible.

I also believe that where it is at all compatible with good health, the chewing surface should be one's own teeth.

Permit me, at this time, to call your attention to a few cases. I like to review the histories and case records of my cases; looking backward is sometimes a great help in our looking forward. If we recognize our mistakes there is some hope of our correcting them.

Well do I remember in 1907, when O. A., male, 38, walked into my office. He was tall, emaciated, anemic and had an anxious expression. For three years he had been spitting blood. He had a slight cough, was weak and unable to work. Except examining his teeth I made a most careful examination. Much time was spent on the examination of the throat and chest. The sputum on repeated examinations was negative for tubercle bacilli—but contained many other organisms, chiefly streptococci and staphylococci. He failed to react to tuberculin, but acting upon the theory that no cachectic person reacts to tuberculin, I was still expecting to find tuberculosis.

The chest showed no gross lesion. I was looking for something that was not there. There was no improvement. I then went to Europe—was away a year. All this time, this undiagnosed case was on my mind.

Upon my return, I found this man had gone everywhere and to everybody, had spent several weeks in one of our large hospitals, where

they like myself, had done everything, had carried out every test, trying to prove that this man was tubercular. Finally, with no relief in sight, and with the statement, "Nobody seems to know," he sent a bullet through his brain.

Gentlemen, this man had pyorrhea alveolaris and had I recognized the condition, or even referred him to a dentist for an examination, he would be alive today. I had noticed the teeth from the standpoint of chewing surface only, and had failed, absolutely failed, to recognize the condition of infection about the gums, and it was from this area of infection that the bleeding came. I make this confession, for I am satisfied had I, or any of the other medical men, who had this patient under their care, at that time known the significance of extensive pyorrhea, he would have been referred to a dentist and his life saved.

E. F., female, age 54, school teacher, single.

*Complaint:* Painful and swollen joints.

*Family History:* Father died at age of 67, laryngitis, sick a great many years (Tbc). Mother died at age of 71. One sister died at age of 31 of a six-months' illness following childbirth (Tbc); two died in infancy. Three brothers living and healthy. One sister living and healthy.

*Previous and Present History:* Excepting for sick headaches has been a healthy woman. Menstrual history negative. Passed climacteric six years ago. Has had no acute infectious disease. For a number of years has had trouble with teeth and for past year has had abscess of lower left incisor. About four weeks ago began to have trouble with joints; the ankles, knees, elbows and wrists have been involved. They are swollen and painful. In February had sore throat; this was followed by serious cold, then came the joint involvement. All this time the tooth has been discharging pus. Appetite good. Bowels move every day by aid of cathartic, oil and bran; if they do not move she gets sick headache. Sleeps well. Weight remains about the same. Today weighs 123½ pounds.

*Physical Examination:* Patient is fairly well nourished. Muscles low tone, soft and flabby. Hair sprinkled with gray. Scalp in good condition. Pupils equal and react promptly to light and distance. Eye ground negative. Mucous membranes are somewhat under color. No marked obstruction to nasal breathing. Tongue slightly coated. Teeth not in good condition, considerable dental work, lower incisor crowned to which bridge is attached, abscessed, draining freely (culture made). Fauces somewhat hyperæmic. Tonsils are ragged and show evidence of recent inflammation. Thyroid moderately enlarged. No evidence of thyroid intoxication. Unable to palpate cervical, submaxillary, post-cervical, axillary or epitrochlear glands. Radial pulses equal, 78, regular as to force and frequency, not of high tension, easily compressible. Radial arteries not palpable. Blood pressure 68-100. Vertebral column negative. Chest symmetrical, well formed. Examination of the heart and lungs negative. Cardiac dullness extends 6 cm. on level with third costal cartilage, being 7 cm. to left and 2½ cm. to right of mid-sternal line on level with fifth space. Heart sounds clear, of good tone, no murmurs. Breath sounds negative. No area of dullness anywhere throughout the chest. Abdomen normal in contour. Upon deep pressure there is some tenderness in the neighborhood and just to the right of the umbilicus, although there is no especial area of tenderness. Lower border of stomach on level with umbilicus. Lower border of liver on line with the costal margin. Area of splenic dullness not perceptibly increased. Unable to palpate either kidney. Rectal examination negative. Knee jerks are brought out under reinforcement.



*Discussion:* Here we have a case of absorption. There is little doubt in my mind that the original focus of infection is to be found in the teeth. There is no question but what the tonsillar involvement that she has, is secondary to that of the teeth. X-ray should be taken of all the teeth and she should be studied most carefully and every possible focus of infection eliminated. The slight tendency toward constipation of course is an aid toward absorption and elimination should be well cared for. Will make complete blood examination.

*Blood Analysis:* Hb. 90%, whites 9,600, polys. 73, small L. 23, large L. 2, large M. 1. Mast. 1. Reds are normal.

*Urinalysis:* Light yellow, slightly turbid, acid, SP. Gr. 1022, albumin and sugar negative, very occasional epithelial cell, very occasional red blood cell, no casts.

May 6, 1918. Finding no other foci than the teeth and what I believe to be a secondary infection of the tonsils, I am referring her to her dentist, with instruction to immediately clean up the mouth from the standpoint of infection. Further than giving a saline laxative am giving no medicine.

May 10, 1918. Patient reports, bringing the films and report from the radiographer. Says the dentist has removed the abscessed teeth and has the others under treatment. She feels much better. The radiographer reports as follows: May 6, 1918. "Large abscess cavity apex left upper lateral. Bone absorbed around distal buccal root left upper first molar. Large amount of absorption of bone around all lower teeth on right side and lower incisors. Some absorption around left lower cuspid." The culture made from abscessed tooth shows streptococcus viridans.

May 20, 1918. All joint symptoms have disappeared. She feels well; is still under the care of her dentist.

I have reported this case in full, illustrating how the physician must in his examination cover all the points mentioned earlier in this paper, if his examination is at all complete, and further, to show what can be done by co-operation between the dentist and physician. By sending her direct to her dentist, who understood her case, the foci were removed, and she was saved with ample chewing surface, and today is well.

R. S., age 44, widower, salesman. July 27, 1917. Complaining of stiffness and soreness of muscles.

"For several years has been having more or less pain in back, coming and going. For past few months has been having soreness and stiffness in muscles of arms and legs, especially in the morning hours."

My remarks at time of examination were as follows: "Teeth in bad condition, much dental work, extensive pyorrhea." Tonsils ragged and show evidence of past inflammation. He was advised to immediately consult his dentist, to have an X-ray of all teeth.

Instead of doing that he consulted a laryngologist, who found tonsils diseased and removed them. There was no improvement. He then consulted his dentist, had an X-ray, with the following report:

"Extensive absorption of bone around all teeth, apical abscesses left lower first and second bicuspid." The dentist cleaned up the mouth from the standpoint of infection and his recovery was immediate and complete.

J. M., age 47, farmer, Mt. Gilead, Ohio, was referred to me for examination in August, 1918.

He was quite nervous, had lost much in weight, was weak and irritable; his chief complaint, however, was pain and stiffness in muscles of neck and back. This pain always was worse after exposure.

The physical and clinical examination although exhaustive, was negative. It failed to show the cause of patient's complaint. His teeth were supposed to be in good condition, none had hurt him and he had just recently had his chewing surface restored by bridgework. I never have seen so much gold in any other patient's mouth, nearly every tooth being crowned.

I sat down and explained to him that the very fact that he had such extensive dental work, made it all the more necessary that they should be carefully investigated from the standpoint of infection. I was then called into service. While there I had a letter from his dentist, stating that several abscesses had been found and that extraction would be necessary. A little later I heard from patient. His muscular pain was gone, he was gaining in weight and strength and was not nearly so nervous.

Three of the cases of purpura hemorrhagica that have come under my observation, have had their origin from infected teeth.

In one there was an extensive pyorrhea, with apical abscesses. The prevailing organisms being the streptococcus hemolyticus, the purpura developed immediately following extraction and she died from convulsions due to brain hemorrhage.

Another followed a streptococcus infection at the apex of a single tooth, in the lower jaw, which was quite active, surrounded by dense infiltration and drained through the cheek. His recovery was complete.

The third followed pyorrhea with apical abscesses, and this in turn was followed by an extensive secondary involvement of the tonsils and peritonsillar tissue. Here recovery was not complete till after both the teeth and tonsils were removed.

Time does not permit, nor is it necessary to report more cases. Nor do we need to discuss the mode of absorption. We must all admit that oral sepsis is a big factor in systemic disturbances. We must also admit that if any thing is done which will give relief, it must be done by getting at the etiology.

I cannot tell you tonight just what per cent. of patients who consult the physician, present symptoms and signs of focal infection, neither can I tell you just what per cent. of these cases have a focus in the mouth, but certainly we are finding many.

In a given case, the physician cannot and ought not to attempt to handle this question alone; if he did attempt to do so, it would be either over- or under-done. There would be either an unnecessary sacrifice of teeth, or there would be left in the mouth areas untreated, from which absorption might occur. He might advise the X-ray; there could be no harm done to the patient by that procedure, but it would be better



to refer the patient to the dentist, with the definite statement: "Examine patient's mouth from standpoint of infection," and the dentist should then be thoroughly alive to the situation. He should have the teeth X-rayed and make all examinations, and either do or advise what is done, but should see that the mouth is cleaned up.

Gentlemen, I firmly believe that if there is a solution to this question, that that solution lies in the most hearty co-operation between the medical and dental professions. Each must be alive to the situation. The physician must consider every possible area which might be a focus, and for that reason the greater burden lies on him.

Even if there should be a small encapsulated abscess at the root of one tooth, with areas of absorption around others, how cruel it would be to advise wholesale extraction, depriving the patient of adequate chewing surface for the rest of his life, when the real area of absorption was in the mastoid. The writer has seen just such a case.

Our aim should be by a most hearty co-operation to have the dentist secure adequate drainage and clean up every possible focus and do it with as little sacrifice as is possible.

City Trust Building

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### SIMPLER METHODS IN CORRECT ARTIFICIAL DENTURE MAKING

BY W. C. DALBEY, D.D.S., DU QUOIN, ILL.

**A**FTER GIVING fifteen years to the study of artificial denture making along the lines of so-called correct Anatomical Occlusion Methods, the writer has come to the conclusion that some enthusiasts have been complicating the subject unduly, almost beyond repair. He, too, must admit that he is himself not guiltless in this matter. Out of twelve different articulators invented by him, (and who can beat it?) only one remains. Where are the others? Relegated to the junk heap! Some of the first ones were as complicated as a Swiss watch. Simple and yet more simple is the word today.

Probably not more than three or four per cent. of the dentists in America today are using the more complicated methods which are advocated by some. Many dentists have become completely discouraged over the subject and have either gone back to simpler methods or have discarded plate-making entirely. Many dentists tell me, when asked how anatomical occlusion is getting along with them, "Oh, I take the impressions and send them to the laboratory and don't bother further about the matter." Certain institutions and manufacturers who are promoting complicated articulators have had the power behind the throne to enthuse the dentists for a season only. These have done much, not intentionally, of course, to discourage the average man in artificial denture making.

The author of this article does not contend that certain good results have not been obtained by these more complicated methods. They will do the work, but at what cost? But are there not methods that will accomplish practically the same results that are less complicated and easier to master; methods that will not discourage the ordinary user? By all means correct plate making should be encouraged by advocating simpler though practical methods.

#### ESSENTIALS OF A PRACTICAL ARTICULATOR

In the first place a practical denture should be made upon an articulator that is capable of adjustment to the exact triangle of the jaw for which the plate is to be made. This undoubtedly is the kernel of the whole process of plate making. An articulator of this kind should have just as few parts as possible. It should be light, though rigid. It should be simple to manipulate.

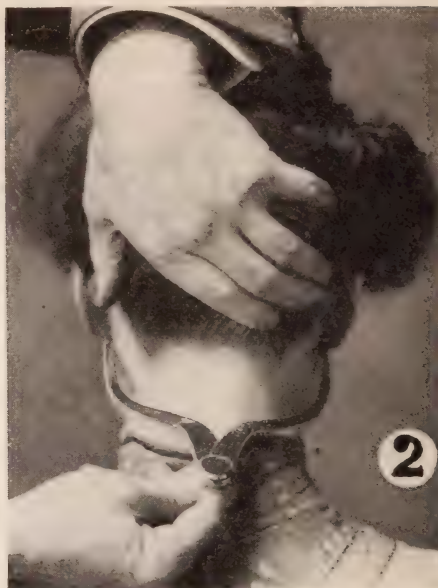
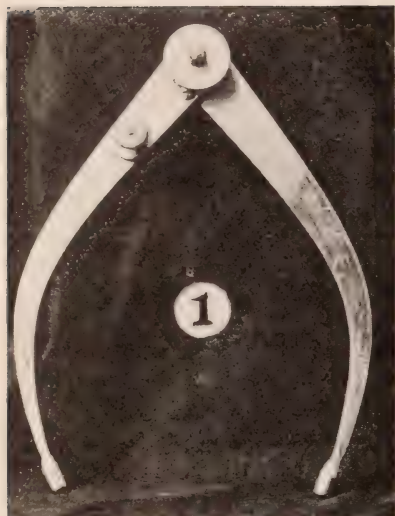
An articulator of this description needs not to bother with the so-called center of oscillation, (or rotation, as some call it, though wrongly), and this is one trying thing that can be eliminated from the more complicated methods. While I am speaking of eliminating some of the complicated methods in plate making, let me say that the "incisal plane" has been made too much of, for this reason: The beautiful anatomical teeth that are obtained at the present day have the cuspid and bicuspid angles so perfectly arranged that the teeth slide almost automatically to their proper places. A little grinding makes them practically perfect.

Another thing that has been made much of in anatomical occlusion is the "lateral movement." The lateral movement must be there all right, but complicating plate making in trying to get this down to "regulation size" upon an articulator is much of it mere moonshine. One need not worry about the lateral movement if his work has been done on a simple articulator the size of the triangle of the jaw of the patient for which the plate was made. Right style of teeth and a little grinding will do the rest and is about all the heart desires.

#### HOW TO GET EXACT TRIANGLE OF THE JAW

At first thought one would think that it would be difficult to get the exact triangle of the jaw from a live human subject. This really is a very simple matter. With a pair of calipers, whose points have been made blunt by dropping a ball of soft solder upon them, (*Fig. 1*) have the patient open the mouth as wide as possible and standing behind the patient, take a measurement upon the necks of the condyles of the jaw. See that the points of the calipers are pressed *well inward* and upon the necks of the condyles. This will be inward of the lower lobe of the ear. This measurement is the same as distance from center to center of condyles. (*Fig. 2.*) This measurement will be the base line of your tri-





angle (Bonwell's Triangle), and the other two lines will of course be equal.

Merely mount your models to this triangle. The trial plates upon models should be mounted, of course, all together in usual manner, and the median line of incisors is the apex of the triangle. This is all that is necessary nine cases out of ten. If you have reason to believe that the triangle is not perfect in your subject, measure with the same calipers the distance from the condyles to incisal point, and mount models to measurement. Of course, mounting models with correct occlusal plane in mind upon articulator by usual methods is understood.

In summing up simple, practical methods of plate making, (I say "practical" and don't forget the word), there are but three things one needs to consider more particularly:

*First*, obtain occlusal plane. If you are in doubt about getting it correctly, use the occlusal plane gauge now on the market and well known by most prosthetists.

*Second*, mounting your models upon articulator adjusted to the size of triangle of the patient for which the plates are to be made.

*Third*, obtain condyle path. In very old patients even this may be eliminated, as many times little or no inclination is registered.

The best method, and perhaps simplest no doubt, is the "open-bite method," first used by the writer. For many patients who have been edentulous for a long time it is difficult for them to close twice in the same place. The open-bite method stretches the muscles tightly and forces the condyles into their paths firmly. When trial plates are in the mouth, the horseshoe bite gauge (*Fig. 3*) is placed into the mouth between the trial plates when mouth is opened. This locks the upper and lower plates together, and when replaced back upon the mounted models the artificial condyle path is set accordingly. (*Fig. 4.*) This is indeed simple and may be done quicker than one can tell about it.

#### THE FINAL ADJUSTING OF THE DENTURES IN THE MOUTH

Be one ever so careful in following the rules of the more complicated methods of anatomical occlusion there must be some grinding of the teeth to insure good mastication. If this is true in the more complicated methods, why not take the shorter cuts and do a little more of it if necessary? No teeth ever were made that were not better for at least some grinding. Right here let me say that "grinding" plates mounted upon an articulator is, I believe a fallacy. One may congratulate himself that he is getting by in this matter but nature will finally grind them differently. The use of carbon paper and engine stones is, I am sure, the correct way of grinding, and too, when plates are in the mouth.

At best we come short in our ideals, notwithstanding what one enthusiast told me that artificial teeth (naming a well-known so-called



anatomical brand of teeth) were better than natural teeth. I often have wondered why God did not consult him when he made the human masticatory organs!

In closing let me say I have not tried intentionally to belittle the work of those who have studied hard to bring anatomical occlusion to a science. They need commending, not condemning. But it does seem to me that a few of the more complicated things may be eliminated. What I want above all else is to encourage the average man to better artificial plate making. If I have succeeded in one little way I am satisfied.

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### PYORRHEA\*

BY STEPHEN H. VOYLES, D.D.S., ST. LOUIS, MO.

IT IS VERY UNFORTUNATE that the word "Pyorrhea" should be the one in most general use to describe that series of conditions which result in the loss of one or many teeth, because of the loss of supporting tissues, with or without macroscopic pus. Earnest students in our profession lament the use of this particular word as being confusing and not descriptive, and every word or term suggested to take its place meets the same fate. Why? Because there has been and still is an attempt to include every pathologic condition of the process and peridental membrane, including the gingivæ, under the one descriptive term "pyorrhea," completely ignoring different causes and only considering the end result. It is as if medical men should include all fatal cases from typhoid, scarlet fever, diphtheria, measles, etc., under one term signifying "fever," ignoring the specific causative bacteria in each, and calling the whole series septic fever. Is it not time that we enlarge our pathologic vision, that we can differentiate more than caries, alveolar abscess, and all the rest pyorrhea? As a basis for argument and discourse let us assume two axioms:

*First axiom:* The dental tissues are relatively highly resistant to infection.

*Second axiom:* The dental tissues, although relatively highly resistant to infection, will succumb to infection if irritated sufficiently and for a long enough time.

These two statements are certainly simple enough to be accepted without argument. The next step in differentiating would then be:

*First, healthy tissues.*

*Second, irritated tissues, not yet infected, i.e., macroscopically.*

*Third, irritated tissues having succumbed to infection, with loss of tissue and pus.*

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\*Read before the St. Louis Society of Dental Science, Feb. 18th, 1919.

Next step: Should it make any difference in our mental vision and nomenclature if the irritating factors be entirely different in character if the end result be the same?

Given a badly-decayed tooth, with healthy supporting tissues or restore the lost tooth structure with an ill-fitting shell crown, or an inlay or amalgam filling, with as much metal impinging on interdental space as in the cavity, what is the result? Irritation long and continuous, often sufficient that the tissues underneath and supporting the tooth become infected and pus forms, the tooth becomes loose and is or should be lost. *Is that pyorrhea?*

Again, a patient, with practically normal occlusion, one or two small occlusal cavities, no tartar deposits, gums either red and swollen or blue and shrunken, pus oozing from twelve or fifteen places (pockets), history of diabetes, syphilis or tuberculosis, no visible local evidence of irritation. *Is this pyorrhea?*

Are both of the described conditions pyorrhea?

Again, patient presents with a good set of teeth, apparently well cared for, gingival margins swollen, white edges, sloughing, slight general temperature; history of sudden attack a few days before, a week or ten days' proper treatment and condition clears up. *Is this pyorrhea?*

Once more, a patient presents with six deep pockets about teeth—all infected of course. In one of the interdental spaces there will be an overhanging crown band; in another an amalgam filling, reposing on the space where gum ought to be; a third because of lack of contact permits of food packing. In three other places in the same mouth there will be similar pockets, with no proximal fillings, no bands, and good contact points. This is not a fantastic description but can be found in many mouths. If the poor dental work in the three spaces caused the pockets to develop, *what caused the other three?*

This sounds confusing, and may be so, depending on how easily our fuses blow!

We can all understand things we see, if we see them clearly. We can see that poor fillings, poor bands, poor contacts, and huge tartar accumulations are irritating, even to the point of infection; *but there must be other causes of irritation* to the dental tissues not so conspicuous. How do we know? Because we find mouths with infected and destroyed process where the traumatic and mechanical irritants do not appear sufficient. *What are these other irritants or is there only one?*

Probably the various theories concerning these other irritants may be embraced in two schools of thought, although there a few straggling ideas not so included. And some men including the late Dr. Black, if I understood him correctly, believe traumatic and mechanical irritants to be the main causes for pyorrhea.

The first school of thought is headed by Dr. Eugene Talbot, of Chicago, who published a work entitled "Interstitial Gingivitis," I think



in 1888. I am not absolutely sure of the date as my copy is held in unlawful detainer by some unknown ingrate to whom I loaned it, a new edition having been published about three years ago. Personally, I believe Dr. Talbot's work the best ever done in the dental profession in any line of research. I will do him the injustice of trying to express his ideas in a paragraph or two. Briefly, he believes that the alveolar process to be a transitory, weak, tissue; it is formed as the teeth form and is lost when the teeth are lost. The circulatory tissues are end organs. It is not a permanent tissue. We know it is a tissue easily irritated by metallic poisons, such as mercury, lead, phosphorus, etc.

Dr. Talbot believes it also is irritated by other poisons, blood borne—toxic substances elaborated excessively in our body chemistry, or insufficiently eliminated even if present in normal amount.

Excessive toxic production and faulty elimination become more apparent as we approach middle life; so does pyorrhea. If these toxic substances occur as described and if they are irritant to the tooth-supporting structures, as he believes, we have sluggish circulation and degenerative process changes, lowered resistance and infection, or pyorrhea. You will see in this idea that the infection and pyorrhea or flow of pus is incidental and is an end result, rather than a cause or specific infection.

This work of Dr. Talbot's, rather generally ignored, is the only one that the writer can see in the light of his own experience and study.

The second school of thought attempts to find the cause for pyorrhea in a specific organism—bacterium or parasite. The search for a specific organism in an open mouth wound, if a pyorrhea pocket may be described as such, is attended with considerable technical difficulty, owing to the profuse mouth flora.

The more or less recent flurry caused by the discovery of the amœba as a specific causative agent in pyorrhea is fresh in our minds. It at least had the virtue of making a pyorrhea specialist of any possessor of a hypodermic and a strong arm.

I even yet hear occasional reports of fashionable stomach specialists and general practitioners who so treat pyorrhea for out of town patients.

The more serious and worthy work in the search for a specific causative agent may be best illustrated by the work of Dr. Hartzell, of Minneapolis. If I understand him correctly he believes that pyorrhea may be caused by a direct invasion of the gingival and peridental tissues by streptococcal bacteria. The bacterial and pathological ideas of the Mayo Institution seem to be strongly upheld throughout the Northwest, and as nearly as I can understand about all the ills that flesh is heir to, owe their being in some way to streptococcus infection. Also, as nearly as I can learn similar institutions in other parts of the country, equipped for serious research work, accept the Rosenow ideas with many mental and spoken reservations. What the future will prove as to the role of focal infections and streptococcus versus other infections we must leave

to the future. The work of Dr. Hartzell and his coworkers is conscientious and intelligent, and must result in great good to us and to humanity whatever the final result may be.

We must hasten to touch just as briefly three more points: *First*, diagnosis; *second*, treatment; *third*, relationships.

The first and second can not well be separated because you can not treat without diagnosing and you cannot treat *well* unless you diagnose *early*. If there is a single intelligent idea in this paper it is in the above sentence. *You cannot treat well unless you diagnose early*. How make an early diagnosis? The signs of pyorrhea are as apparent as the signs of a railroad crossing.

A railroad crossing may be only two streaks of rust and a bump; or the more familiar cross-arms; and last, the more imposing movable gates. Woe unto the patient of the dentist who can see only gate crossings, but there is hope for your patient if you can see the signless bumpy crossings. To my eye the early signs of pyorrhea are changes in color about the gingivæ. It is indeed a rare mouth in which gum-color is the same and unbroken, and there seems little excuse for a dentist who spends his working life looking into mouths, not to see and notice spots that are off color. The inflammation color, chronic or acute, is not that of health. If you see the danger color, try and find out the cause of it and you will cure many cases of pyorrhea by prevention, the best of all cures. A little later sign is change of contour. The contour of gum supported by process is entirely different from that not so supported. This may sound vague but observation will show many such places, where contour change is the most apparent sign of underlying tissue absorption. Those of you familiar with the skillful prosthetic work of twenty or thirty years ago will recall that many men carved gums in porcelain or rubber with a concavity just root-wise to the gum margins. That is a true pyorrhea manifestation; bone absorption without gum recession. Look and you will see it often.

Best of all means of diagnosis is the X-ray. X-rays of pyorrhea mouths are often a matter of wonderment to me, even after long experience in their use. I have learned to use a small and very soft silver probe in all pockets to explore the depth and contour, and a thorough use of such probe may be sufficient for the dentist, but what of the patient? The life of a pyorrhea denture is so dependent on the daily care by the patient in mouth cleansing that every means should be used to stimulate their interest and persistence. Seeing is believing. A patient with no knowledge of pyorrhea or any other wrong condition, like the one whose models and X-rays I shall show later, is impressed by what he can see when mere words of advice are mere words. Patients can appreciate the probable state of affairs when they can *see* the depth of pockets in the X-ray and their co-operation is much more sincere and lasting in my experience.



It is also my experience and observation that most men who sincerely try to treat pyorrhea, attempt to treat and retain teeth that an X-ray would show should be removed. We are moved by the wishes of the patient; the difficulties of replacement and possibly a little pride in our own efforts to save and prolong natural dentures. There may be many factors to influence us in deciding when or when *not* to extract, but from my own experience I believe the general tendency is to be decidedly too slow in insisting on extraction. I believe that general practitioners sending cases to the pyorrhea specialists should first obtain X-rays and himself should decide with the patient, what teeth should be treated and what, if any, should be extracted. Specialists are infected with the same pride that we all have, and feel that it is a reflection on their special skill to intimate that any pyorrhea tooth cannot be cured. We must all learn that such is not the case. There are often cases when individual teeth should be extracted to prolong the life of adjacent ones, and the question of general health is ever present and ever a question worthy of our best thoughts.

This brings us to the question of relationship; teeth vs. health; cause and effect.

What is the answer? There are many answers; most of them labels of bottled nostrums with which we are being flooded. This is a sad, sad world, and if we could give voice to all the serious questions that deserve answers it would be one loud noise.

*Is pyorrhea a result of a health condition, or is it the cause?*

*Or, is pyorrhea both cause and result of bad health?*

My guess is, that it is both cause and effect. Any mouth with infected root pockets is a possible menace to the patient's health and should be treated as such, regardless of what originally caused the pockets.

I also believe that certain health conditions will produce dental tissue irritation sufficient to invite or make possible pyogenic infection, such infection again producing toxins which if absorbed will react on health, or the establishment of a vicious cycle, or we may have direct bacterial invasion from pocket.

This question of relationship embraces the entire scope of pathology and biology; it is being and has been studied by scores of the world's greatest minds and greatest institutions. Dismissing for the moment the problems for which we know not the answer, let us seek a practical every-day application of those things we do know or at least partially know.

*First*, the only *generally-accepted* treatment of value in pyorrhea is a local surgical treatment which consists *first*, in the removal of all known irritation, and the securing and maintaining of surgical cleanliness in the tissues involved.

*Second*, the earlier in the progress of the disease such treatment is given, the less rapid is the development of the disease, and the prevention and elimination of infected pockets with possible systemic absorption, is more possible.

Notice that I do not use the word *cure*, for the only known cure for pyorrhea is its prevention. The moral, then is this: In the present state of knowledge, let us look and search for small gingival irritations; if we find and remove such irritations while they are small we may be able to keep the tissues in such a state of health that pyorrhea may be prevented.

As this paper began with an apology let it also end with one. This has been written on short notice and at odd moments, with no opportunity for a single hour's reading, so it is written entirely from memory. If I have misinterpreted anyone's ideas it was not intentional and pardon is craved.

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#### AN EXCEPTION TAKEN

EDITOR THE DENTAL SUMMARY.

Sir: I am in the habit of reading your "DENTAL SUMMARY" and find in it a great deal that is interesting, but I wish to take exception to an article that appeared in the June number. It was entitled "Preventive Dentistry" by Geo. M. Cooper, M.D. I notice that he is inspector of schools and on this account, I am the more surprised at what he says.

He calls the attention of "every young dentist" to the world of difference between a "trade" and a "profession." He says the difference is that a tradesman asks "How much can I get?" but the professional man "if he be true to his heritage must ask, What service can I render?"

I contend that there is no such difference as Dr. Cooper makes. Either the dentist or the tradesman who asks simply how much he can get is acting unworthily, and the dentist who thinks there is such a difference is wrong. A trade is just as honorable as a profession and it is only worth conducting in so far as the tradesman renders a service.

May I ask that you will insert this letter or the gist of it in your periodical?

Yours truly,  
CHARLES BELL



## HOW ANESTHETICS PRODUCE ANESTHESIA\*

BY PROF. W. E. BURGE, URBANA, ILLINOIS

PHYSIOLOGICAL LABORATORY OF THE UNIVERSITY OF ILLINOIS

MANY THEORIES have been advanced in attempts to explain the mode of action of anesthetics in producing anesthesia. Bibra and Harles (1847) held that anesthesia was due to the dissolving and direct removal of the fat-like substances or lipoids from the brain cells by the anesthetic. The rapid recovery alone upon cessation of anesthetization is regarded as sufficient evidence to render this theory untenable. According to the theory of Meyer<sup>1</sup> and Overton<sup>2</sup> the narcotics of the methane series produce their characteristic effect by going into solution in the lipoids of the nervous system. The fact that there are so many anesthetics that do not belong to the methane series and are not fat solvents (nitrous oxid and magnesium sulphate being examples), would seem to indicate that the Meyer-Overton theory, while explaining how the narcotics obtain access into the nerve cells, does not explain how anesthesia is produced.

Paul Bert<sup>3</sup> and Arloing<sup>4</sup> showed that oxidation was decreased during anesthesia and that this decrease was more extensive with a powerful anesthetic, such as chloroform than with a less powerful anesthetic, such as ether. Verworn<sup>5</sup> and his pupils consider that anesthesia is due to decreased oxidation, while Crile<sup>6</sup> claims that it is due to the acidosis arising from the diminished or defective oxidation.

The present investigation was begun in an attempt to determine how anesthetics decrease oxidation. We<sup>7</sup> had already found that whatever increased oxidation in the body produced a corresponding increase in catalase, an enzyme possessing the property of liberating oxygen from hydrogen peroxid, by stimulating the liver to an increased output of this enzyme and that whatever decreased oxidation produced a corresponding decrease in catalase by decreasing the output from the liver, and by the direct destruction of the enzyme. Hence, the conclusion was drawn, that catalase is the enzyme principally responsible for oxidation in the body. Stated more specifically, the present investigation was

\*Read during the fourth annual meeting of the Interstate Association of Anesthetists in conjunction with the Indiana State Medical Association, Claypool Hotel, Indianapolis, Indiana, September 25-27, 1918.

<sup>1</sup>Meyer; Arch. f. exper. Path. u. Pharm., 1899.

<sup>2</sup>Overton; Studien über die Narkose, Jena, 1901.

<sup>3</sup>Bert; Dastre, Les Anaesthesiques, Paris, 1890.

<sup>4</sup>Arloing; Ibid.

<sup>5</sup>Verworn; Narkose, Jena, 1912; Narcosis, Harvey Lect., 1912, 152.

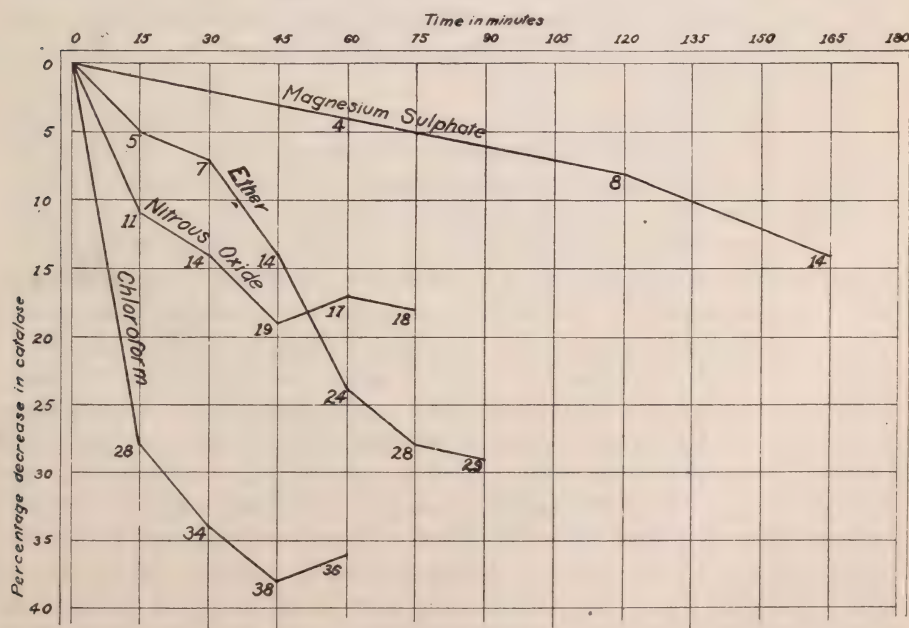
<sup>6</sup>Crile; The Origin and Nature of the Emotions, 1915.

<sup>7</sup>Burge, Neill, and Kennedy; *The American Journal of Physiology*, 1916, xli, 153; 1917, xliii, 58; 1917, xliii, 433; 1917, xliii 545; 1917, xlv, 290, 1918, xlvii, 13; Arch. *Int. Med.*, 1917, xx, 892; *Science*, 1917 N. S., Vol. xlv, No. 1192, 440; 1917, N. S., Vol. xlv, No. 1199, 618; 1917, N. S., Vol. xlviii, No. 1239, 327.

begun to determine if anesthetics produce a decrease in the catalase of the blood and hence of the tissues parallel with the decrease produced in oxidation and if this decrease is proportional to the depth of the anesthesia.

The animals used in the experiments were cats. The catalase of the blood was determined by adding 0.5 cc. of blood taken from the external jugular vein, to 250 cc. of diluted hydrogen peroxid in a bottle at approximately 22 degrees C., and as the oxygen gas was liberated it was conducted to an inverted, graduated vessel, previously filled with water. After the oxygen gas thus collected in ten minutes had been reduced to standard atmospheric pressure, the resulting volume was taken as a measure of the amount of catalase in the 0.5 cc. of blood. The material was shaken in a shaking machine at a fixed rate of one hundred and eighty double strokes per minute during the determinations. The results of the determinations are given in *Fig. 1*. The figures (0-180) along the abscissa indicate time in minutes; the figures (0-40) along the ordinate indicate percentage decrease in catalase.

The anesthetics used were ether, chloroform, nitrous oxid and magnesium sulphate. These widely different kinds of narcotics were chosen intentionally. The chloroform and ether were administered by bubbling air through these anesthetics in a bottle which was connected by a rubber tube to a cone adjusted to the snout of the animal; the magnesium sulphate anesthesia was produced by the subcutaneous injection of 7.5 cc.





of a 20 per cent. magnesium sulphate solution per kilogram of body weight, and the nitrous oxid anesthesia by administering a mixture of nitrous oxid in the proportion of 1 to 5, or 80 per cent. nitrous oxid and 20 per cent. oxygen. The curves in *Fig. 1*, marked "chloroform," "nitrous oxid," "ether," and "magnesium sulphate" were constructed from data obtained from cats during anesthesia produced by these different anesthetics. It will be seen that chloroform decreased the catalase of the blood 28 per cent. during the first fifteen minutes of anesthesia, 34, 38 and 36 per cent. during the succeeding fifteen minute intervals. Nitrous oxid decreased the catalase of the blood 11 per cent. during the first fifteen minute interval, 14, 19, 17 and 18 per cent. during the succeeding fifteen minute intervals. By examining the curves marked ether and magnesium sulphate, the rate and extent to which these anesthetics decreased catalase may be seen.

If narcosis is due to decreased oxidation and if this decreased oxidation in turn is due to a decrease in catalase, then the destructive effect of an anesthetic on catalase should be an index to the character of anesthesia produced by the anesthetic in question. By comparing the rate and extent of decrease produced by the different anesthetics used it may be seen that chloroform, in keeping with its rapid and powerful action, decreased the catalase of the blood most extensively and abruptly; that nitrous oxid, in keeping with its rapid, but less powerful action, produced a very abrupt decrease, but not such an extensive one; while ether, in keeping with its more powerful, but less rapid action, produced a more extensive, but less abrupt decrease than did nitrous oxid; magnesium sulphate decreased the catalase of the blood very slowly, and not very extensively.

It should be said in this connection that no attempt was made in the experiments described to administer the anesthetics in equimolecular concentrations. All except the magnesium sulphate were administered in sufficient concentrations to produce a fair degree of anesthesia by the end of the first fifteen minute interval, and the amount administered during the remaining periods was such as to keep the animal in fairly deep but safe narcosis. We have found that by choosing large, active cats with blood of high catalase content, and by forcing the anesthetic it was possible to decrease the catalase much more quickly and extensively than was done in the preceding experiments, but even in these cases it was found that the same relationship held; that is, chloroform produced a more abrupt and extensive decrease in catalase than did nitrous oxid or ether; while the nitrous oxid produced a more abrupt but less extensive decrease than did ether. We also found that when the catalase had been decreased as far as it could be by the use of nitrous oxid, it could be decreased considerably more by changing to chloroform. It may be that the greater tendency toward acidosis in chloroform narcosis is due to this greater destruction of catalase with resulting decrease

in oxidation, and to the greater injury of the liver, the organ in which catalase is formed.

#### SUMMARY

1. Narcotics of widely different constitution, such as chloroform, ether, nitrous oxid and magnesium sulphate, decrease the catalase of the blood, parallel with the increase in the depth of narcosis.

2. A very powerful anesthetic, such as chloroform, decreases the catalase more quickly and extensively than does a less powerful anesthetic, such as ether. Slowly acting anesthetics, such as magnesium sulphate, decrease, accordingly, the catalase of the blood more slowly than a quick acting anesthetic such as nitrous oxid.

3. As a result of the experiments reported in this paper, and of work done previously on the anesthetics in this laboratory, the theory is advanced that narcosis is primarily due to the decrease in catalase produced by the decreased output from the liver, and by the destruction of catalase by the narcotic, with resulting decrease in oxidation and increase in acidosis.

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#### GEMINATED TEETH

BY H. L. AMBLER, M.S., D.D.S., M.D., CLEVELAND, OHIO

VOLUME I, No. 1, of *The American Journal of Dental Science* (the first dental journal) published in New York, June, 1839, for three dollars per annum, and edited by Chapin A. Harris, of Baltimore and Eleazer Parmly, of New York, (formerly of Painesville, Ohio) with Solyman Brown, 17 Park Place, Sec., and printed by Kelley and Fraetas, 70 Bowery, occurs "Case of Osseous Union of the Teeth," by Eleazer Parmly, viz:

"A lad about eight years of age, was brought to me by his parents, whose mouth presented the most singular appearance that I ever have witnessed. The incisors were all through the gum, and about one-half of the crown of each tooth could be seen distinctly; but they were so irregular in their arrangement, and so remarkable in their form, as to render the mouth so unlike that of other children of the same age, that no person seeing merely an impression or cast of the mouth, would imagine it to belong to a human being. The superior front and lateral incisors were completely and perfectly united both in their enamel and bony structure; the posterior surface showing two distinct teeth, while the anterior presented one smooth and polished surface, excepting at the cutting edge, where there was a slight division. These teeth were as large, and occupied as much space as the four front incisors generally do in the male subject; they were very prominent, and behind them were two other teeth in form and size resembling the lateral incisors. I removed the central incisors, together with the laterals attached to them; then by mechanical pressure, to bring the two supernumerary teeth to-



gether which stood behind them; and also, bring forward the cuspidate in proper time so as to make a tolerably even arrangement. Now the supernumerary teeth occupy the place of the superior front incisors; the cuspidati occupy the position of the lateral incisors; the first bicuspid the place of the cuspidati, and so on, as all of the permanent teeth have come in. Bell on "Anatomy of the Teeth" asserts the existence of such osseous union, but Koecker denies it. This month I have extracted two teeth, the crowns of which were completely united."

Garretson, fourth edition, page 406, shows union of two front upper teeth, and also union of three front teeth.

This illustration shows germination-confluence-fused upper incisors in the mouth of a boy five and one-half years of age; probably there was one root and one pulp chamber in each geminated tooth. This case occurred in the practice of H. L. Ambler.



Geminated teeth often show early symptoms of caries. A deciduous tooth may become firmly united to a permanent tooth. Hopewell Smith, says: "True gemination is the term applied to those teeth which are joined to one another by some cause which operates during developmental periods, and without the aid of inflammatory conditions of the root membrane; enamel and dentin generally may constitute the material which unites the teeth; as a rule members of the same dentition are affected, but it occasionally happens that individual teeth of the two dentitions are concerned; the cause may be due to dichotomy of the tooth germ at an early period of evolution, or it may be due to fusion of two or three tooth germs; this commonly occurs in a parallel direction; but not always; the teeth may be joined throughout their lengths, wholly or partially. In deciduous teeth the lower incisors and cuspids are most frequently geminated; the first and second incisors, or second incisor and cuspid may be united, or rarely two incisors and a supernumerary tooth. In the permanent set supernumerary teeth often are geminated to molars or incisors."

Rose Building.

## COTTON PROCESS ETHYLENE-ETHER ANALGESIA\*

BY JAMES H. COTTON, M.A., M.D., TORONTO, CANADA

ONLY A FEW YEARS AGO it was customary for the anesthetist to classify an ether as good or bad, according to its irritative properties. These were roughly estimated by the annoyance caused the anesthetist by the hypersecretion of mucus and little attention was paid to the amount of ether used or the concentration of its vapor. If a patient did not respond as rapidly as expected to etherization, he was considered an alcoholic or to be otherwise immune to its effects. Some few anesthetists realized that *too closed methods* of administration (Clover inhaler) produced the excessive secretion of mucus, while others improved their results by making the concentration of their ether vapor as uniform and low as was consistent with good, surgical anesthesia.

To establish a clear line of research a series of analyses and administrations were undertaken to determine the actual role of the irritative properties of ether impurities. These were divided into (a) *anterior nasal*, due to alcohol or acetones; or (b) *nasopharyngeal*, due to aldehydes. *Smells*, for the most part, were found to be due to the sulphur group.

It was found that the actual irritation value of any ether of standard aldehyde percentage to the mucous membrane, varied inversely with the anesthetic power of the said ether, and directly with the immunity of the patient to ether anesthesia. This presupposed that *first*, patients varied; as also do, *second*, the anesthetic powers of different cans of ether.

In proof of the first contention a large amount of ether was mixed and administered to different groups of patients. Five cases of a known alcoholic type were compared with five cases of a similar weight, but of a type which had not indulged. These patients were from thirty to thirty-five years of age. The alcoholics required from 25 to 75 per cent. more ether than did the non-alcoholics. Although the variation is not exact, the age and weights propositions were considered as having already been sufficiently proved.

In discussing the variation in anesthetic potency of different cans of ether, an unlimited field of research is entered, that leads back to the startling suggestion of a year ago, that: "*Absolute ether is not an anesthetic at all.*"

## ANESTHESIA

Before proceeding further it is necessary to come to an agreement concerning the state commonly considered as anesthesia. Personally,

\*Read during the Joint Session of the Interstate Association of Anesthetists and Indiana State Medical Association, Claypool Hotel, Indianapolis, Ind., September 25-27, 1918.



*I consider anesthesia as analgesia—blocking of sensory impulses from the periphery, plus narcosis—or sleep.*

When a patient shows a type of breathing, a certain amount of muscular relaxation and contracted central pupil, is he actually surgically anesthetized? For years anesthetists and surgeons have recognized ether anesthesia by a series of such symptoms, and have neglected the fact that patients carried to this stage may still suffer from severe shock, and instead of being anesthetized are in reality only narcotized.

Interpreting each nervous system by the symptoms which customarily arise from it, what results obtain when a pure nerve poison acts upon the nervous system complex? Some well recognized facts are: *First*, that a nerve poison acting on any nervous system first stimulates, then depresses, then kills; *second*, that the more specialized a nervous system, the more sensitive it will be and the more easily it is stimulated, depressed and killed; and *third*, that the order of specialization of the various nervous systems are:

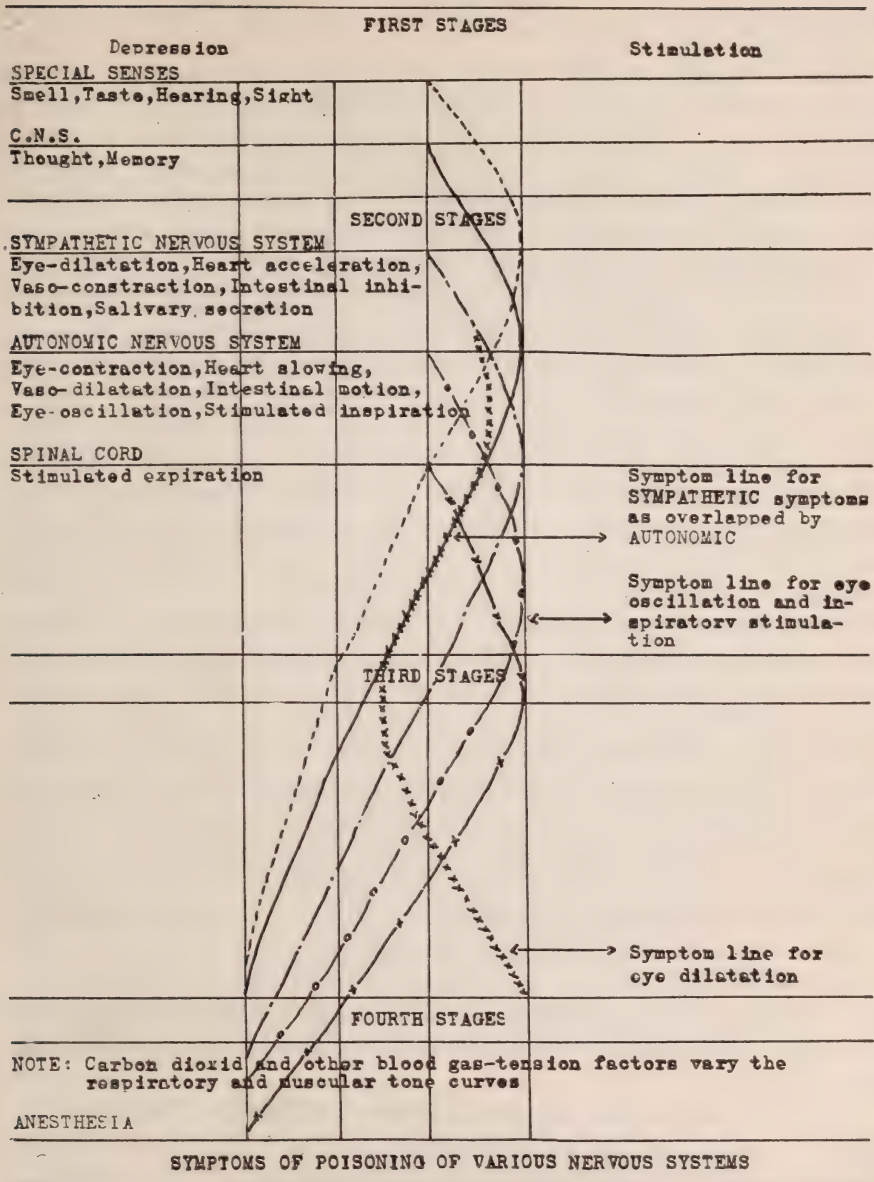
Most specialized:

Special Senses,  
Central Nervous System,  
Sympathetic Nervous System,  
Autonomic Nervous System,  
Spinal Cord.

Now all these stages and symptoms of nerve cell poisoning are those of anesthesia as quoted in the text-books, but not of real anesthesia, since they do not in any way fulfill the requirements for the blocking of sensory nerve impulses, and the very basis of the teaching of anesthesia, apparently has been incorrect. Anesthetists and surgeons have been safeguarding the toxicity of ether and neglecting the shock of operation under narcosis, as nerve cell poisoning is simply an additive factor to operative shock.

#### ANESTHETIC POWER AND VARIATIONS FOUND IN MARKETING ANESTHETIC ETHERS

Three years ago statistics affecting one hundred and fifty abdominal cases operated under anesthesia by a certain brand of ether were compared with the results in another one hundred and fifty similar cases, anesthetized with another make of ether. With one ether, after induction, from 4 to 8 ounces were required per hour of maintenance; with the other ether from 6 to 12 ounces. From the aldehyde research it had appeared likely, but this was the first actual record that anesthetic ethers could vary in potency. It was found that the more potent ether contained traces of gases as well as more alcohol. Clinical trial of the weaker ether, in some ten cases, by increasing the alcoholic content, while it lowered the freezing point of exhaled moisture, preventing mask frosting and retaining ether and ether products on the mask longer, did not



vary its anesthetic potency. It was, therefore, reasonable to suppose that some factor, other than alcohol, varied the anesthetic potency of an ether.

Research was then undertaken to obtain absolute ether from the commercial ethers already on the market. At that time these ethers were in a far more impure state than they are now, as the fusel oil groups were always detectable. After one and one-half years of hard study



and work, a sufficiently chemically pure ether was obtained to warrant its clinical trial on patients.

This ether was so mild in odor that it could have formed the basis for any perfume. To the surprise and chagrin of all concerned, on administration, it was found not to be a good anesthetic. Dr. Samuel Johnston, a noted Toronto anesthetist, used 15 ounces on a middle-aged patient, who was congested to blueness without mucous secretion and without the production of proper anesthesia. There was a severe struggling stage; while muscular rigidity and sensory reflexes persisted and could not be suppressed. A few drops of Squibbs ether were then administered and the patient sank into a quiet anesthesia without sensory reflex. Very little more Squibbs ether was required during the whole of that operation. Excessive after-sickness resulted. Dr. Perfect, who was the surgeon, also vouches for these facts. This same ether, *when perfectly fresh*, was used on nine other cases—all dental. Although symptoms of nerve poisoning resulted, no real anesthesia was produced in any one case, although from 9 to 14 ounces had to be given before the patients were stupid enough for extractions. Instead of sensation being obtunded it frequently became hyperesthetic. Persistent muscular tremor and peripheral congestion occurred in each instance. On going under, patients complained of *feeling perfectly awful*, and post-anesthetic nausea and vomiting usually resulted. The pulse-rate rose very high during induction.

This same ether was then given to three cats for experimental purposes. Each cat was carried to the point of suspended respiration and then resuscitated. At no time were the muscles relaxed and although the cats were completely narcotized, the leg would twitch on being pricked with a pin. The recovery on resuscitation was almost immediate. After being supposedly killed three times, an apparent anesthetic condition could be obtained, but this was probably due to exhaustion. A few months ago this experiment was repeated in detail before a number of interested witnesses at one of the experimental stations of the DuPont Chemical Works, but since then similar results have not been found by these chemists.

From the above data it was concluded that absolute ether was not a good anesthetic and that real anesthesia could not be obtained unless it contained some potent synergist as yet unknown.

The first co-operative thought of was carbon dioxid. It was found that the peripheral spasm and muscular tremor following the administration of from 6 to 8 ounces of absolute ether, could be completely relieved by a small amount of carbon dioxid. As described in a previous paper, this *carbon-dioxid-absolute-ether anesthesia* is a type of its own. In a demonstration given at the Academy of Medicine, Toronto, I compared the action of absolute ether with that of nitrous oxid, in which the carbon-dioxid tension factor is also a necessity. The anesthesia

produced by this carbon-dioxid-ether method is very similar to that obtained from nitrous oxid and the recovery is almost as rapid. In practice, it was found convenient to administer the carbon dioxid in a solution with ether in a metal syphon-soda arrangement with a controller similar to that used on the glass ethyl chlorid tubes.

Over twenty operations of a major as well as many cases of a minor type were performed under carbon dioxid-ether anesthesia with excellent results. There was no real after-nausea in any one case. The amount of ether averaged about 5 ounces an hour. The only objection to the anesthesia was the excessive stimulation of respiratory effort. The color and pulse were good and no case showed mucus. The patient on whom the method was demonstrated at the Academy of Medicine, Toronto, joined the physicians in attendance, and had coffee with them within three minutes after his extraction operation.

While clinical experiments continued in the operating room, ether research progressed in the laboratories, as there was not considered to be enough carbon dioxid in most commercial ethers to act as the potential factor in anesthesia. *It was then discovered that this absolute ether on being passed through a certain process, developed wonderful anesthetic powers.* Its analgesic properties were such that almost major operations could be performed with the patient still able to articulate clearly, without pain and not at all sleepy. More concentrated administration produced beautiful, quiet, sleep anesthesia, without shock. After a certain length of time, however, this product would deteriorate to an unusable degree, although the analgesic power increased in more than equal proportions. A few breaths, although fairly irritating, would produce almost completely obtunded sensation for some hours. Six cases were tried, including myself and friends, and we began to wonder if we were ever going to completely recover our feelings. We were otherwise normal, except for a slight sluggishness of memory.

Careful concentration and extraction of gases from this product demonstrated the presence of certain ethylenes and their by-products. As these were not present in the absolute ether base, they must have developed in the process.

Ethylene gas was then made by text-book methods and added to absolute ether. It transformed absolute ether into a moderately good anesthetic, but the results were not comparable with those previously obtained; in fact such ether was by no means as good as Squibbs'. However, with careful synthesizing and research, anesthetic synergists of exceedingly high value and potency were finally obtained.

The product, now recognized by the medical profession as Cotton-Process Ether, is simply ether, purified to an almost absolute stage by the methods originated, plus these synergists. As these synergists were for the most part of a gaseous nature it was considered desirable to retain them in the ether in greater quantities than would remain at ordinary



atmospheric pressure. With this end in view the ether has been kept in sealed glass ampules of about 1 ounce capacity, the idea being to administer it direct from such containers.

#### PECULIARITIES OF COTTON-PROCESS ETHER FOR ANESTHESIA

Although this ether was primarily developed for analgesia only, a number of anesthetists and surgeons have used it and have reported it satisfactory for anesthesia.

*Method 1—Administration from Drop Bottle on Open Mask.* This method, though apparently successful, never should be used, as ether gases of great anesthetic value are allowed to escape. By this method the anesthetic power is about that customarily obtained from any good commercial ether, the after-effects being possibly less.

*Case 1:* Patient, female; age 28; weight 160 lbs.; operation for intestinal adhesions; induction gas-ether; time 4 to 6 minutes; time of operation, 1 hour. Amount of ether used 8 ounces by volume on open mask. Condition during operation: absolute relaxation; no mucus; color and pulse normal.

*Method 2—Administration Direct from Ampule on Open Mask.* The glass tip of the ampule is broken off and the end of the ampule is inserted into the rubber socket of a device similar to the automatic cut-offs of ethyl chlorid tubes. The gas pressure in the ampule is sufficient to expel the ether when the cut-off is opened and the ether is dropped or sprayed on the mask as with ethyl chlorid.



Device for attaching to ether ampules.

*Case 1:* Patient, female; age 41; weight 104 lbs.; pulse 120; operation thyroidec-tomy. Previous medication  $\frac{1}{8}$  gr. morphin and 1/200 gr. atropin 20 minutes before anesthesia. Administration: pulse immediately after induction was 110. During operation it dropped to 100, then to 80. On recovery it registered 108. Time of induction 3 minutes; time of operation 1 hour. Patient recovered sufficiently to speak in 20 minutes. Was somewhat drowsy for several hours. Amount of ether used 5 ounces. No after-nausea. Surgeons: Drs. Perfect and Harrison.

*Case 2:* Patient, Mrs. C.; age 70; weight 112 lbs.; operation, breast amputation. Administration: time of induction 6 minutes; operation 1 hour. Amount of ether used 5.5 ounces. No after-nausea and patient recovered before reaching room. Stated she had enjoyed going under. Surgeons: Drs. Hay and Wesley.

*Method 3—Oxygen Semi-Closed.* (A) *Gwathmey Apparatus.* The value of this method was first drawn to the author's attention by Dr. J. F. Baldwin, of Grant Hospital, Columbus, Ohio, who was the first surgeon to use highly-charged ether in any moderate series of major cases.

The technic is one of Dr. R. A. Rice's "Perfected Methods of Anesthesia" (described in the *American Year-Book of Anesthesia and Analgesia*, 1915-1916) in which oxygen, from a low-pressure tank, is led through the Gwathmey three-bottle, dosimetric vapor apparatus, with its ascending and descending percentage control, and the saturated oxygen-ether vapor, washed and moistened in the warm water bottle, is conducted by means of a rubber tube to a closely-fitting face mask, or oral air-way to which is attached a rebreathing bag. Baldwin reported twenty abdominal operations carried out, from start to finish, with this apparatus and method of anesthesia. The amount of ether used averaged from 1 to 3 ounces. The recovery was more rapid and the after-effects less than those occurring with ordinary ether. With this ether and method it was possible to induce anesthesia by the vapor method, whereas, previously, with other tinned ether, ethyl chlorid was always used for induction and almost double the amount of ether was found necessary for maintenance.

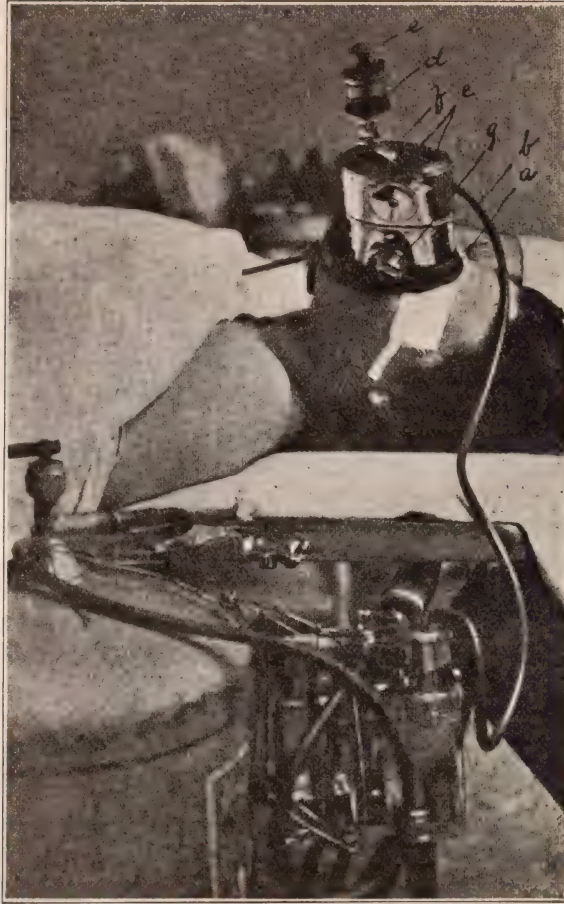
(B)—*Modified Vapor Apparatus*. This apparatus was designed to provide a vapor device with a large ether container, providing area sufficient for surface evaporation, thus obviating the undesirable feature of carrying over ether particles, as they are bound to be when the oxygen is passed through the ether. The ether is placed in the container (E) through a tap in the top of the container, all ether gases being thereby retained. Oxygen is admitted from a low pressure tank into (D) a soft rubber bag at the rate of about 10 litres an hour. With the mask fitted tightly over the patient's face, tap (A) is opened, permitting the breathing of oxygen, then tap (B) is slowly opened, allowing part of the oxygen to carry over ether vapor. As more ether is required tap (A) is closed down. Excess rebreathing, causing dysphonia, may be rectified by emptying bag (D). The whole apparatus is hung on the oxygen tank.

This method is positively fool-proof for Cotton-Process ether and will maintain the patients uniformly at any required depth of anesthesia. With it the new ether shows over double the anesthetic potency of tinned ether and recovery is almost instantaneous.

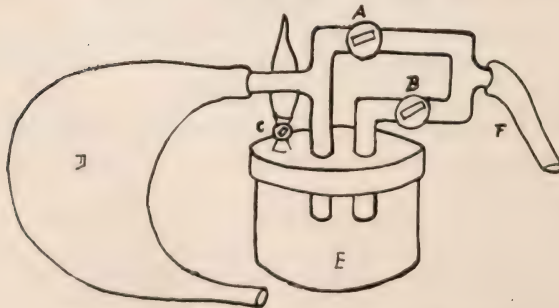
(C)—*Perfected Apparatus*. This is described under the consideration of analgesia and was developed to provide a simple, portable device, especially available for war purposes.

*Case 1:* Patient, Nurse; age 28; weight 125 lbs.; operation removal of tonsils. Administration: author's special apparatus. Time for induction 4 minutes; complete surgical anesthesia apparently obtained. Time for removing first tonsil 2 minutes; patient then completely awake but without feeling. She carried on conversation for 3 minutes when mask was reapplied; anesthesia reinduced in 1 minute. The same rapid recovery after removal of second tonsil. Soreness in throat was not detectable for over one-half hour and during this period patient took nourishment. She considered the whole procedure a very pleasant experience. Amount of ether used 1.5 ounces. Throat reflex present before each tonsil was completely removed. Surgeon: Dr. Perfect. Witnesses: Drs. H. Harrison and Carveth.





Rice perfected method for vapor etherization.



Modified vapor apparatus for ethylene-ether.

*Case 2:* Patient, Mrs. B.; age 35; weight 115 lbs.; operation, removal of 14 teeth. Administration: author's apparatus, patient in sitting posture. Time of induction 4 minutes. Patient held her own mouth open. Did not complain of pain for 10 minutes. Anesthesia was reinduced in 2 minutes and the remaining teeth removed. Patient was

quite awake all the time and was able to walk about afterwards. Amount of ether used 1.5 ounces. Surgeon: Dentist. Witnesses: Drs. Carveth, Perfect and Harrison.

*Report from Mrs B.:* Arrived home about 1:30 P.M. feeling pretty good considering so much so that I walked home rather than get in and out of street car. Had a cup of tea and soaked biscuit and laid down. When taking the ether I did not have any going-away sort of feelings and was not at all nauseated. I can remember coming round partly before the dentist finished, but it caused me no pain. I could have eaten hot roast pork had there been any and my mouth permitted.

(Signed) LILLIE BOOTH.

*Case 3:* Patient, female; age 35; weight 115 lbs.; operation, cholecystectomy and appendectomy. Administration: author's apparatus. Time of induction 5 minutes. Previous pulse 100; pulse during operation 70. Relaxation during first part of operation easily obtained. Duration of operation 1 hour and 20 minutes. Amount of ether used 3.5 ounces. Regurgitated 4 ounces, but did not remember it or suffer from after-nausea. Patient was able to walk while being returned from the operating room. Surgeons: Drs. Perfect and Harrison.

Personally I have found that by open methods, although the amount of ether required is not large, patients recover so rapidly from deep stages of anesthesia that a careful and even drop-rate administration is required. By the oxygen semi-closed vapor apparatus the maintenance of anesthesia is much more regular. If anesthesia is badly administered, however, a certain amount of salivation may result. The Carveths, of Toronto, consider the new ether ideal as an induction anesthetic, for it is very rapid, and out of a fair number of cases they have not yet noted any excitement stage. They maintain anesthesia by any method whatever, except in abdominal work. Here, they state that the patient's muscles cannot always be completely relaxed, although there is never any muscular spasm. This opinion has been corroborated by some other anesthetists and therefore deserves consideration.

#### POST OPERATIVE NAUSEA AND VOMITING

For years, post-operative nausea and vomiting have been recognized as the great disadvantages of etherization. In a previous paper it was shown that carbon monoxid may be produced by the super-heating of ether in contact with metal and the slightest trace of this poison, when present in ether, will cause severe nausea. It is frequently introduced into ether by the high temperature from soldering the can. *It must also be remembered that if an ether is not a sufficiently potent anesthetic, due to the absence of its synergists, a very large amount of the ether or narcotic group will have to be administered, and post-narcotic nausea and vomiting must follow.*

With ethylene-ether nausea and vomiting after patients have awakened has not yet occurred, as far as the author has been able to secure information, but regurgitation before awakening has taken place in the use of oxygen semi-closed methods of etherization when the administration was stopped too abruptly.

In selecting patients for this anesthetic, attention should always be paid to the urinary analysis in order to detect the presence of any degree



of acidosis. In judging the sickening effects of any anesthetic it is well to bear in mind the following two facts: *First*, post operative nausea rarely occurs in elderly people, especially when they are suffering from any degree of heightened blood-pressure; and *second*, a certain class of operations having to do with the intestines and especially the gall-bladder, will, of themselves, give rise to nausea and vomiting.

#### ANALGESIA

This whole research was undertaken to develop some reliable method of producing analgesia, especially for the handling of war wounds, and during its course the following data were secured for study:

*Exhibit A—Comparison of Induction Analgesia with Absolute and Ethylene Ethers: Oxygen Semi-Closed Method.* Absolute ether was first administered to twelve cases and the results studied relative to blood-pressure, pulse-rate, analgesia and after-effects. Two days later a similar series of administrations were undertaken on the same cases with absolute ether containing a large amount of ethylene derivatives.

With the absolute ether the blood-pressure immediately rose 16 to 20 mm., systolic, whereas when ethylene was present, in half the instances it dropped 10 mm., in three it remained normal and in the remainder it rose 10 mm. With absolute ether, analgesia resulted in six cases, while the other six patients became hypersensitive and remained so until they fell asleep. *The period of analgesia occurred in all cases in which ethylene ether was administered, long before the patients became unconscious.*

Patients inhaling absolute ether complained of a very depressing sensation during the induction and most of them went into a struggling stage, at which point the administration of the anesthetic was stopped. Their recovery was exceedingly slow and violent headaches invariably occurred within an hour. Those patients taking the ethylene-ether enjoyed going under; there was no excitement or struggling stage; recovery was almost instantaneous and none complained of unpleasant after-effects.

*Exhibit B—Rebreathing of Oxygen.* As methods involving the rebreathing of oxygen had been found useful for the administration of ethylene-ether, it was thought desirable to study them more closely. Vapor-apparatus similar to that described under Anesthesia was used. The ether container was filled with caustic potash sticks in order to absorb any accumulation of carbon dioxide. An excess of oxygen was given—10 to 20 litres per hour, and the blood-pressure readings were closely followed in twenty cases. Eighteen of these showed a slight drop in systolic and a fair rise in diastolic pressure. The other two had their rise in diastolic, but their systolic pressure did not vary. The pulse-rate remained normal in all cases.

*Exhibit C—Blood-Pressure Variations.* The figures in *Chart I* are the average of those recorded with a commercial ether containing very

little ethylene and those in *Chart II* with an ethylene-saturated ether, respectively.

## BLOOD-PRESSURE VARIATION: CHART I

		Pressures			
Time	Systolic	Diastolic	Pulse	Pulse	
Previous	120	80	40	80	
1	150	70	80	116	
2	160	72	88	96	
3	160	90	70	80	Beginning Analgesia: not Surgical
4	130	100	30	80	
5	135	110	25	80	
5.5	145	118	32	80	
6	150	118	27	80	
6.5	140	90	50	80	
7	130	85	45	90	No Analgesia
7.5	128	90	38	100	
8	120	85	35	110	
8.5	118	100	18	100	
9	115	105	10	90	Struggling Stage
9.5	110	85	35	90	

## BLOOD-PRESSURE VARIATION: CHART II

*An Ethylene-Saturated Ether*

		Pressures			
Time	Systolic	Diastolic	Pulse	Pulse	
Previous	120	75	40	80	
1	130	90	40	90	
1.5	140	100	40	100	
2	140	105	35	80	Analgesia to Surgical Degree
3	140	100	40	80	
4	120	90	30	72	Sleep
80 mins.	120	90	30	72	Anesthetic stopped
85 mins.	130	90	40	85	

From these figures it is readily seen that the ethylene group acts as a stabilizer of the circulation. Relative to the struggling stage it was observed that this complication always seems to occur when the pulse-pressure was extremely reduced by a decrease of systolic as well as a rise in diastolic blood-pressure. Patients, sufficiently conscious at this stage, blamed their restlessness on a peculiar numbness—not analgesia, as well as a hollow sensation in the abdomen. With the onset of sleep there always occurred a drop of about equal degree in both the systolic and diastolic pressure. Whether this drop is responsible for sleep is a question that can only be satisfied by circumstantial evidence.

## THEORY OF ANALGESIA

Bearing in mind the data developed in *Exhibits A, B and C*, it is of interest to study the various physico-chemical changes of *state of solution* and *vapor tension* of ether as it passes through the blood stream, with the view of determining how ethylene synergists may act in producing analgesia.

The boiling point of absolute ether is about 34.5 degrees C. When ether is administered it passes through the walls of the alveoli to enter into solution in the blood circulating in the lung tissues. The temperature of this blood is between 36 and 37 degrees C., or 1.5 to 2.5 degrees C.



above the boiling point of ether. On this account an ether-gas-tension will develop, thereby limiting the amount of ether that can enter the blood stream.

The point of maximum heat production in the circulation is in the end capillaries of the peripheral tissues where combustion takes place. Here the temperature suddenly rises to over 39 degrees C. It will be easily understood, therefore, that when the ether from the lung tissue reaches this point through the arteries, the gas tension will be enormously increased, both on account of the lowering of pressure and the increasing of temperature.

Ether, like alcohol, acts centrally and otherwise on the nervous system to cause a general vasodilatation, thereby slowing the blood stream in the capillaries and reducing the metabolism and temperature. This is shown by the drop in diastolic pressure taking place on the administration of absolute ether.

Volatile anesthetic substances enter the blood stream at the lung capillaries much more slowly than does ether. If they are present in the ether administered, the vasodilatation caused by the ether will be replaced by vasoconstriction as soon as they gather in the peripheral circulation in sufficient concentration. That is, the administration of an ether together with these anesthetic gases, is followed by a short period of vasodilatation, succeeded by vasoconstriction and increased capillary combustion. During this vasodilatation the heart will beat more rapidly due to the relief of pressure, but as soon as vasoconstriction develops, the pulse slows down with the increasing resistance.

It has already been emphasized that when ether only is present in the blood stream there is an ether-gas-tension increasing in the peripheral tissues, which is lessened according to the resulting vasodilatation, by the reduction in metabolism as well as the relative approximation of blood-pressure between arteries and capillaries. Thus it can be seen that when the ether-gas-tension in the capillaries becomes very great and these capillaries are constricted, there will be an enormous escape into and retention of ether in the surrounding tissue fluids, and the ether becomes concentrated in the lymph and tissue cells. When this concentration is sufficient the sensory nerve endings lying in the tissue fluid will become insulated and no longer able to function. The motor nerve endings are not affected as they enter directly into the cells that they govern.

In the central nervous system, where the metabolism is not nearly so great, the ether will not localize. In other words, if the capillaries throughout the body are kept normally constricted, ether will localize in tissues according to their state of metabolic activity and this localization produces localized analgesia by sensory nerve ending insulation. The blood-pressure curves, already charted, show that ethylene and carbon dioxid (as we have already assumed), tend to equalize the circulation by

lowering the systolic as well as raising the diastolic pressure. Oxygen, as has been shown, does practically the same thing, to a much less extent, and therefore might also be classified as a synergistic gas.

It must be remembered in this connection that volatile anesthetic substances cannot maintain constriction of capillaries unless the nerve control of these capillaries is healthy; and without this maintenance marked analgesia is impossible. Bearing on this point is the fact that it is exceedingly difficult to obtain analgesia (without narcosis) in patients suffering from anemia, hemorrhage, syphilis and prolonged fever.

#### METHODS FOR OBTAINING ANALGESIA WITH ETHYLENE-ETHER

These methods aim to utilize all the gases in ether, as the analgesic power of an ether depends on their presence.

*Method A—Open Mask Administration direct from Ampule.* An arrangement such as described under *Method 2* in Anesthesia was found convenient.

*Case 1:* Female; weight 180 lbs.; age 42; operation, breast amputation; time of operation, 45 minutes; anesthetist, Dr. Carveth. Patient capable of talking throughout whole of operation. She had no pain whatever and could not feel on what part of the body they were working. Ether used, 5 ounces.

*Case 2:* Male, Base Hospital, Toronto; weight 150 lbs.; age 48; operation, resection and cauterization of part of abdomen for cancer; time of operation, 1 hour. Patient capable of talking throughout and quite clear mentally. He complained of being hungry before the hour was up. Pain returned within 3 minutes of cessation of anesthetic. Ether used, 3 ounces.

*Case 3:* Male; age 18; weight 180 lbs.; operation, adhesions and resection of tubercular mass from abdomen. Time of operation, 1 hour and 10 minutes. Patient remained very clear mentally and cracked jokes throughout. He was given a small meal while the surgeons were operating on him. Abdomen was completely relaxed, except at one time when he insisted upon kissing the nurse. Eyes were slightly dilated and pulse remained at 80. Amount of ether used, 3 ounces.

*Case 4:* Male; aged 48; weight 132 lbs.; operation, opening and scraping abscess. Time for induction, 5 minutes. Senses dulled and unable to talk clearly. Length of operation, 12 minutes. Amount of ether administered, 2 ounces. Patient held his breath for one-half minute during recovery, which was complete in one minute. Patient then changed tables himself. There were no after-effects. Surgeon: Dr. Harrison. Witness: Dr. Carveth.

*Case 5:* Male; aged 33; weight 190 lbs.; returned soldier; operation, opening arm. Patient complained of feeling dull, but otherwise felt normal. Time of operation, 45 minutes. Time of induction to analgesia, 6 minutes. While under he stated he did not simply want to lose sensation to pain but that he wished to go to sleep, as he was tired. Amount of ether used,  $3\frac{1}{2}$  ounces. At two previous operations it was impossible to induce him with commercial ethers and chloroform had to be resorted to.

*Case 6:* Male; aged 42; weight 140 lbs.; operation, resection of teeth from ankylosed jaw. Time of induction, 4 minutes. Time of operation, 1 hour and 40 minutes. Amount of ether used, 6 ounces. Patient sat up and held his head in position while teeth were resected from jaw. He had no sensation whatever to pain. He answered the phone twice during the operation and seemed to be in possession of all his mentality.



*Case 7: Comparison of Cotton-Process Ether with ordinary C-E Mixture.* Patient, aged 24, on account of a recent attack of pneumonia, was to be operated on under local anesthesia for an acute appendiceal condition. She was given  $\frac{1}{4}$  gr. morphin and 1/200 gr. atropin as a preliminary, as she was exceedingly nervous. At 11 P.M. she entered the operating room and the skin over the site of the operation was carefully infiltrated with 0.1 per cent. anocain solution. Six minutes later the incision was made, but the patient was unable to stand further manipulation on account of the deep soreness of the underlying abscess. At the request of the surgeon the houseman started the administration of the C-E Mixture. The patient became excited, and after 1½ ounces had been used she dropped into a light sleep, but the abdominal muscles were extremely rigid and there was a tendency to stop breathing. The incision made through the anterior aponeurosis was followed by severe muscular spasm. I then suggested the use of an ampule of ethylene-ether on the open mask. The patient was allowed to wake up and the ethylene-ether was then given on the open mask, without the usual surrounding towel. Within four respirations her muscles relaxed completely and she was entirely without sensation, although she was able to answer questions clearly and was not excited, and would do anything requested. The operation continued and the abdomen was opened. The appendix had not ruptured, but the whole of the cecum was adherent to the abdominal wall and pelvis. One ounce of ethylene-ether had been used by this time and as another ampule had to be fetched from the storeroom, the C-E Mixture was again administered to note its effect. Sensation returned and the patient became blue if the C-E Mixture was pushed. Ethylene-ether was again used. The patient woke up and was able to talk. Her abdomen again relaxed. Operation continued one hour. Adhesions were broken down and the appendix successfully removed. Three ounces of ethylene-ether were used. During its use, at any time during the operation, the patient could have walked as easily as she talked. Afterwards she remembered answering questions but did not know anything about the operation while under the ethylene-ether.

One peculiar fact was noted. While under ethylene-ether the pulse ranged about 80 and under the C-E Mixture it would immediately rise to 120. The patient stated that she was hungry and thirsty during the operation, as she was also afterwards. There was slight dilatation of the pupils, but otherwise they were normal. They would roam about when covered, but fixed on any object when allowed to see.

Patient was as clear mentally at the end of the operation as at the beginning. Pain recurred within 3 minutes after cessation of the anesthetic.

#### *Other Cases*

15 Obstetricals: These patients were entirely relieved from pain, without reduction of the expulsive effort. Six were primiparæ and in four forceps had to be resorted to. One case was an induced delivery of a dead fetus at 8 months, while in another instance operative measures were required on account of hydrocephalus.

59 Cases of successful Analgesia reported by Dr. Hudson.

9 Dental cases reported by Dr. Carveth.

32 Dental cases reported by the Dental Department of the Toronto General Hospital.

6 Dental cases for relief of pain for drilling.

6 Breast Abscesses.

40 Administrations for Dressings.

1 Epispadias Operation.

2 Hernias.

4 Varicoceles.

4 Abdominal Operations.

*Method B—Bottle Inhaler Method.* Two varieties of this apparatus have been perfected. In each a bottle capable of holding at least 4 ounces was used. The cork in the simpler form was perforated by two

tubes, one of which opened to the air and the other T'd off to nasal tubes coming from the nose of the patient. Ether was introduced through open tube to the bottle and patient breathed in through the nose and out through the mouth, as required. Valves were later introduced to prevent the patient from breathing back into the ether bottle. In the more complicated variety the same principles were accomplished by a single perforation of the bottle cork by means of sleeve tubes connected with the valve. This method of administration was found quite unsatisfactory in a number of cases, as it was difficult to teach patients how to breathe, and they would constantly forget as their memory became undermined by the ether. It was used successfully in over one hundred administrations for painful dressings and in twenty obstetrical cases. In deliveries, however, a number of failures to secure satisfactory analgesia, by this method of administration, have been reported.

#### WAR ADMINISTRATION

Open mask administration in war surgery would be out of the question, as the patients are difficult to induce and it is important to conserve every particle of ether on the battlefield. With this end in view the inhaler bottles were at first thought suitable. Dr. Foot, now in service, attended to the origination of the details of these bottles. They proved unsuitable, as too much time had to be consumed in each case teaching the patients how to breathe properly.

The mask, herewith illustrated, was then conceived and made by the author, and it accomplishes the purpose. With its use analgesia results after four breaths of the anesthetic have been taken and one only depends on the patient to hold the mask in place.

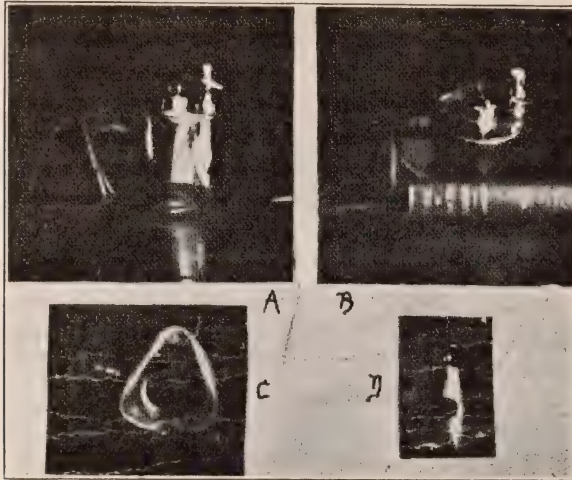
One case lately demonstrated at the Western Hospital was a woman who had been knocked down by a motor car and had her clavicle fractured. She was prejudiced against taking any anesthetic until told she could give it to herself. The patient talked throughout the whole operation and was entirely without pain until six minutes after the anesthetic was stopped. She then stated that she wanted more of it as it made her happy. There were, of course, no after-effects. Major Harrison, of the British Army was in charge of this case. A second case was undertaken with this same apparatus. The patient was seventy years of age and weighed one hundred and ten pounds. The operation was to open a knee joint. It required two and one-half minutes to induce analgesia. The time of operation was twelve minutes. About one ounce of ether was used and the patient was not at any time abnormal mentally.

For ordinary dressing cases or the probing of wounds, only 1 or 2 cc. of ethylene-ether are required when this mask is used. As many as twelve dressing analgesias have been induced with one ounce of this ether.



## CIGARETTE INHALATION AND WAR ANESTHESIA

One very important point with regard to war surgery is that of cigarette inhalation immediately previous to anesthesia by any ether. If the soldier patient has inhaled cigarette smoke within ten minutes of his induction, the systolic blood-pressure will rise from 30 to 100 mm. beyond that rise which would normally take place, and even dilatation of



The photos are, for the most part, self explanatory. *Figs. A and B*, view the mask from the side, while *Fig. C* shows the face part. *Fig. D* represents the shutter by which the ether is turned off and on. With the handle of the shutter turned toward the nose the patient breathes directly into the bag. The shutter is rotated toward the Intake Tap to turn on the ether. The anesthetic can be poured into the vaporizing chamber by unscrewing the tap or an aliquot can be introduced direct from the ampule by inserting it into the Intake Tap.

For prolonged analgesia or anesthesia, oxygen is run into the bag at the rate of from 6 to 12 liters per hour. If the accumulation of carbon dioxide becomes excessive in the bag, and the patient's breathing becomes stertorous, the bag is emptied of its gases and the patient is allowed a few breaths of air. For brief analgesia or anesthesia, oxygen is not required and the patient is ordered to fill the bag with one or more big exhalations before the anesthesia is started.

the heart may result. He will also invariably suffer from a headache afterwards. Cigarette inhalation following an anesthetic always aids the recovery of patients from the effects of the ether.

## NECESSITY FOR EXPERT ADMINISTRATION

Many have complained to the author that in order to use this gas-ether they had to learn new and complicated methods of administration, and they did not seem to recognize that this knowledge simply allows them to understand the materials they thought they were so familiar with. In fact, the complaint only goes to emphasize that anesthesia is a specialty requiring the highest possible education in both chemistry and physiology. Unfortunately, certain members of our profession,

due most likely to their lack of interest in the subject, have adopted the layman's view that an anesthetist is a mechanical technician, who pours a certain dose of an anesthetic down the neck of his patient. The places of these few might, with profit, be taken by a nurse or trained orderly, as such could certainly not be called anesthetists. They are, at best, assistants to the surgeon. If this view is persisted in it will not only endanger human life, but further progress in anesthesia will be completely blocked and a blissful ignorance will reign.

A number of nurses, who have witnessed analgesia work with gas-ether for dressing cases, have been delighted, inasmuch as they considered the thing so simple that it represented the beginning of the reign of nursing anesthesia. For light analgesia, such as is required in the dressing of fresh wounds on the battlefield, anesthetist technicians may be able to use this ether and method of administration, when emergency demands, but for major surgery a great deal more knowledge of the intricacies of anesthesia is required for its use than has heretofore been necessary.

This whole research was persisted in for the sole purpose of securing an ether for painful dressings, and if it can be utilized efficiently to make things more bearable for the boys at the front, our purpose will have been completely accomplished. The theoretical and operative work mentioned in this paper were simply undertaken to this end and the results are given to the profession for what they are worth.

793 Spadina Street.



PERSONNEL OF THE FIRST BOARD OF DENTAL EXAMINERS IN THE STATE OF OHIO

(1) Dr. H. A. Smith, Cincinnati; (2) Dr. Moses De Camp, Mansfield; (3) Dr. W. P. Horton, Cleveland; (4) Dr. Jonathan Taft, Cincinnati; (5) Dr. F. H. Rehwinkel, Chillicothe.



## ANALGESIA AND SHORT ANESTHESIA IN DAILY PRACTICE\*

BY WILL WALTER, M.D., EVANSTON, ILLINOIS

**P**AIN IS A RELATIVE SENSATION. Its intensity varies with Individuals, as we all know, but this variation depends more than we realize upon differences in things physical as constitution and inheritance and temporary state; or as to mental attitude, such as continued or recurrent irritations, worries; and with fever, and degrees of fatigue. Many persons are called brave and plucky who know not the suffering from major injuries or surgical manipulation which others get from a pin prick. Some races are praised for great endurance under stress of all types when indeed, because of physical conditions or the evolution of protective functions against the sensation of pain or its lack of perfection as a sensation, they do not suffer.

Dr. George Crile,<sup>1</sup> who early made observation at the war front in this regard, told me that the exhausted man had little sensation of pain remaining. The added pain of operation is trivial compared with the previous suffering.

It is probable that the sensation of pain is a function becoming or remaining active according to its protective value and when it fails of manifestations it is either disordered, as for instance in pituitary disease, or of no value because of the enormity of the injury, as by instantaneous severing of a limb; or its needlessness as in brain or bone injury or in exhaustion states.

Pain is rendered keener, by repetition—a cumulative stimulus, as in the field of the special senses—and its experience in and after childhood makes for hyperesthesia throughout life.

We are a sensitive nation comparatively. There are exceptions due to racial and individual variations, but in general in daily practice we encounter hypersensitive patients.

And because of the evils of early-inflicted pain and the cumulative stimulus of its repetition, it should be our business to save the suffering daily experienced by our patient. The painful examination, the opening of furuncles, paracentesis, removal of foreign bodies, setting fractures, reducing dislocations, introduction of sutures and their removal, first dressings of open wounds and burns, skin-grafting, passing of probes, minor operations of types too numerous to mention; in fact all painful procedures should be rendered painless if we are to save the shock which would tend to produce a nervous, fearful state, and to save the suffering which unnerves.

\*Read during the sixth annual meeting of the American Association of Anesthetists, Auditorium Hotel, Chicago, Ill., June 10-11, 1918.

<sup>1</sup>George W. Crile; *A Mechanistic View of Peace and War*, 1915, 28-30.

And it is no simple problem to accomplish this practically. Local anesthesia is not suitable for the young because of the pain of the primary injection. The skin is the region producing the most reaction. Nor is infiltration of inflamed areas altogether desirable or very effective.

We have in nitrous oxid-oxygen the ideal means if some of the existing difficulties may be overcome; and some of the measures evolved to meet them may be best studied by enumerating what they are.

*The first difficulty* has been that it required too much time to get things ready. Apparatus has been complicated, requiring mechanical genius or at least experience to get it going.

*The second* is the need of assistants to co-operate in its administration.

*The third* is the safety element.

*The fourth* is the expense incident to its use.

*The first or the element of time* now favors nitrous oxid-oxygen with modern apparatus as compared with infiltration anesthesia, since the latter requires sterilization of needles, preparation of solutions and time for infiltration. With regard to other forms of anesthesia such as morphin-scopolamin and ether there must be added the needed preparation, the prolonged time of induction, and after-effects of variable duration.

The safety apparatus which we use<sup>2</sup> has only to be turned on to the required flow. It does not take a minute to have ready. Also it is available away from the equipment for short cases like paracentesis or abscess drainage, and dressings, by simply loading the bag and detaching it for carrying to the patient. The tight mask and the unleakable bag and attachments make it sure and convenient. During the past three years we have many times taken the loaded bag to the patient's residence for these short operations and for dressings, or even for induction of ether anesthesia.

*The second difficulty*, that of assistants, is not so easy to meet, because certain types of patients do not take any anesthetic well, and require a deal of restraint. But in general and especially with the young who require restraint, whatever is being done, no added help is needed if the apparatus is simple and delivers its ratio of gases without undue attention. We shall see that the trick in this is to get genuine analgesia as we define it and avoid the need of enforced restraint by not going over this borderline.

*As to the third or safety elements*, these, in nitrous oxid-oxygen anesthesia, are: *A*, that no high pressures be ever possible. With 800 and 1,200 pounds pressure in tanks, it is not safe to administer gases without intervening reducing valves and safety devices; and although underwriters class such apparatus as hazardous they are still found frequently in use; *B*, we must know that the oxygen and nitrous oxid are flowing as shown by the indicators, and that it does not follow in apparatus depend-

<sup>2</sup>An Apparatus for the Administration of Gas-Oxygen. *New York Medical Journal*, Feb. 19, 1916.



ing upon the opening of valves to greater or less dimensions. If the pressure varies the flow varies, and stop cock and springs and friction valves are not dependable. Types which show actual flow are necessary. This is most important in apparatus for uses of which we are speaking, i. e., where no anesthetist is present, and the practitioner is handling the anesthesia himself; because the second element of safety in nitrous oxid anesthesia is in reality *oxygen*.

Unless there is sufficient oxygen to sustain life there is loss of residual air—oxygen starvation—and death results. The requirements of oxygen are not less than one ounce per hour or four gallons by volume. But as there is always loss of gases even with the tightest mask, the allowance in an apparatus for safety should be not less than thrice the actual need, viz., twelve gallons per hour. This must be the actual amount flowing and not simply the amount which *should* be flowing according to an indicator.

There is still another element of both time and safety in nitrous oxid-oxygen employment, which is that the *analgesic state* is the desirable one to maintain. Analgesia as we define it is a borderline state, i. e., anesthesia just short of unconsciousness without the sensation of pain. "It hurts but you don't feel it!"<sup>3</sup> The ratio of oxygen to nitrous oxid is the determining factor in this<sup>4</sup> and hence must be controlled definitely. Over this borderline is where the patient loses control, fights, resists or what not, if that is his bent.

We do not now think of analgesia as anything short of anesthesia and define as hypesthesia those degrees of lowered pain sensation which are short of anesthesia with consciousness. It would seem better to insist upon this distinction as it is important.

In the minds of the profession the word analgesia has come to signify modified sensation of pain and the term has come to be employed loosely. Analgesia means *without pain* quite as much as anesthesia. We have also fallen into the habit of speaking of degrees of analgesia and of anesthesia. In view of the resulting confusion it would seem proper to limit the term analgesia to loss of sensation without loss of consciousness. This would then apply to local obtunding by infiltration, nerve-blocking or nitrous oxid-oxygen analgesia. Anesthesia would then apply to loss of sensation and also consciousness. It would then be possible to adopt the neurological term hypesthesia for lowered, though not lost, sensation, and hyperesthesia for heightened sensation.

I am led to believe, therefore, that there is a stage of relaxation with gas-oxygen adequate for any operation without the deep relaxation which injures. It is aided by preliminary medication with morphin and scopolamin one hour before. While we do not yet know just what the

<sup>3</sup>Will Walter; Trans. Amer. Acad. Ophthal. & Oto-Laryng. 1915.

<sup>4</sup>Symposium on Anesthesia. *Chicago Medical Recorder*, June, 1918.

objective signs are, some day perhaps we shall learn to maintain analgesia with relaxation—genuine anesthesia short of unconsciousness—and then we shall have attained an ideal. Then we shall not have post-operative *organ recitals*, nor shall we permanently injure our patients, neither their nerve nor their muscle tonus. Toward that end we are tending. Improved technic will, I am sure, help us to attain it and for this we must depend in no small degree upon simplicity, safety, efficiency and accuracy of apparatus.

We cannot know much definitely unless we have an accurate measure of the ratio of gases. Analgesia can be appreciated in no way so well as by self experimentation.

Much may be done with patients in the hypesthetic state (oxygen, 25-40; nitrous oxid, 75-60 per cent.), if they are controlling themselves well, the edge is taken off the pain and it is made more easily endured.

Patients are tided over by it and may be maintained in this state for a long time and then swing into analgesia by lowering the oxygen ratio below 25 per cent. and down to around 15 per cent.; but when we get toward 10 to 5 per cent., general anesthesia with unconsciousness supervenes.† Hence the need of accuracy in measurement of the gases. In the analgetic state, as we define it, the patient feels no pain but is conscious of what is going on, and sufficiently so to respond to suggestion, to do what you tell him, but there being no voluntarily motor control, he will not answer.

With sufficient oxygen in the mixture there is little danger from gas-oxygen. Nitrous oxid contains no oxygen available for respiration. We should really put the matter reversely and say: Enough oxygen must be given to supply respiratory needs and if we supply that we are safe, and having that supply the degree of thesia, whether hypesthesia or analgesia or anesthesia, is determined by the amount of added nitrous oxid. The volume of combined oxygen and nitrous oxid is variable with the depth and volume of respiration. There must be enough flowing to supply the needed volume.

Uncertain measures are not safe. Extraction specialists employing gas without oxygen added would do well to study this exact method. It would save them much hurrying and make their work much easier. With the further addition of suction to carry off the blood from the site of operation as now practiced in tonsillectomies, their difficulties would be minimized and their operations become smooth, safe and dignified procedures throughout.

*As to the element of cost.* With former types of apparatus the expense was high, due to loss and improper use of gases. Much of this loss was through the improperly-fitted mask. Much of it was due to forcing gases to the patient under pressure, so that it came to him even

†Increased rate of depth of respiration does not give anesthesia, given a low ratio of nitrous oxid to oxygen less than 80 to 85 per cent. The percentage of oxygen is the controlling factor, not the respiratory function.



against his expiratory effort instead of merely flowing to the bag, allowing him to breathe it naturally. With late models and improved methods we run on less than 50 gallons of nitrous oxid per hour, which is one-third of the early cost. To be exact, we are now running at a cost of about \$1.00 per hour, or for short cases of analgesia 10 to 15 cents per patient. As the time saved more than compensates for that, we are no longer thinking of this element.

According to our title we should limit our discussion to analgesia and short anesthesia in routine practice; but by the use of proper technic many cases hitherto thought major types, and indeed made major operations by ether, become minor affairs.

Dr. Ben Morgan, an expert in ether, has made a good point in emphasizing that the athlete who has been completely relaxed and flabby under ether never regains his athletic powers.

We go further and state that no adult who is deeply relaxed comes back with the same muscle tonus—commonly called *pep*—whether this relaxation is from ether, a knock-out in the boxing ring, or from tonus-killing morphin combinations; nor indeed from relaxing types of pyogenic or exhausting diseases. The athlete knows it because he has reason to. He has certain peak loads to carry which he at once finds he can't do. But the every-day fellow finds it out if he watches himself.

As Morgan says, the patient will tell you long after operation, like appendectomy, that he has not been the same since his appendix was removed. The fact is he should date his reversal from the day he was so *ether-logged*.

During the past fifteen months I have had personal experience with nitrous oxid-oxygen having taken it something over fifty times to relieve the excruciating pain caused by manipulation of a fractured shoulder, and the conclusions to which I have come are: that anesthesia with consciousness is possible; that in this state the subjective sensation of pain is present but is not felt; also that relaxation is on this borderline and that the percentage of oxygen in the mixture is always the determining factor.

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#### AN OMISSION

In printing the list of business concerns that have installed industrial dental clinics in our June issue, the name of Lee S. Smith & Son Mfg. Co., Pittsburgh, was omitted for lack of information. We are very glad, indeed, to add this name, particularly as it gives the dental trade a place on the honor roll.

## AN INTERESTING EXHIBIT

J. H. BRISTOR, D.D.S., MANSFIELD, OHIO

The Richland-Ashland Counties Dental Society had as its honor guest at its meeting and dinner, on April 3, 1919, Dr. Gilbert W. DeCamp of Mansfield, who recently retired from the practice of dentistry after a continuous practice of fifty-four years, all of which were spent in Mansfield, Ohio. Dr. DeCamp is the son of Dr. Moses DeCamp, who was a member of the first Board of State Dental Examiners and the first treasurer of the Ohio State Dental Society. Dr. DeCamp has in his possession a picture of the members of the first board of examiners, (a copy of which will be found on another page of this issue,) a list of questions asked of applicants before this board for license, on December 3, 1872, and a copy "Scale of Prices" adopted by the Central Ohio Dental Association at a meeting held at Wooster, Nov. 14 and 15, 1865. These he exhibited to the members present at the Richland-Ashland Counties meeting.

LIST OF QUESTIONS OF THE  
OHIO STATE BOARD OF DENTAL EXAMINERS  
DECEMBER 3rd, 1872

1. What are the Organs of Mastication? Describe them; give their location and relation to each other.
2. At what time do Teeth Germs first appear?
3. At what time does the Eruption of the Temporary Teeth begin, and at what time is it completed?
4. Give the time, and order of the Eruption of the Permanent Teeth.
5. Describe the parts that give mechanical support to the Teeth.
6. What are the functions of the Teeth?
7. Give the general structure of the Human Tooth.
8. What are the materials of which Teeth are composed?
9. Give the order of arrangement of these materials.
10. Do the Teeth receive Nutrient Supply? If so, in what way?
11. What Arteries supply the Superior and Inferior Teeth?
12. What Nerves supply the teeth? Give their origin and course.
13. Describe the Mucous Membrane of the mouth. What is its function?
14. Describe the Salivary Glands—give their location and function, and the object of their product.
15. Describe the Antrum of Highmore. To what diseases is it subject? And what is the treatment?
16. Describe the structure of the Tooth Pulp.
17. What is Digestion? Describe the process.
18. What is Nutrition?
19. What is accomplished in and by the Blood, in a complete circuit through the system?
20. Through what channels is the waste of the system eliminated?
21. In what ways may these eliminating processes be interrupted?
22. What is disease? What are the causes of it?
23. What results follow disease?



24. What is Dental Caries? Give the process by which it is accomplished. Give the names, nature and origin of the agents by which it is affected.
25. What conditions predispose the Teeth to Decay?
26. What Prophylactic Treatment will best preserve the Teeth from Decay?
27. What Surgical and Mechanical Treatment is efficient for the arrest of Caries of the Teeth?
28. What systemic and local Therapeutic Treatment is efficient for the arrest and prevention of decay?
29. Does persistent pain accompany Dental Caries, before exposure of the Pulp?
30. Does local sensitiveness usually accompany decay? If so, what treatment is indicated?
31. Describe the successive steps in properly filling a cavity, entering the masticating surface of a Molar.
32. To what diseased conditions is the Tooth Pulp subject?
33. Is the preservation of the Pulp important to the welfare of the Tooth?
34. Is the preservation of the Pulp, after exposure, usually attainable? What are the methods of treatment, and the circumstances that modify it?
35. Give the indications of Periostitis; also of incipient and developed alveolar abscess. Give the treatment for these conditions.
36. What is Necrosis, and what are its manifestations as far as the teeth and the contiguous parts are concerned?
37. What is Salivary Calculus? What its points of deposit, and what its source?
38. What are the indications for extracting Teeth?
39. Is the operation of extraction liable to be attended by accidents? Name them.
40. How would you arrest Hemorrhage?
41. What is an Element?
42. How many are there, and what are some of the properties common to them?
43. What is a Chemical Compound, and how formed?
44. What is an Alloy? What is an Amalgam?
45. What is the difference between Chemical and Physical Force?
46. What is an Anesthetic Agent?
47. Of what is Nitrous Oxid Gas composed? What is the method of preparation?
48. What impurities is it likely to contain? How may these be removed?
49. What is the physiological action of Nitrous Oxid upon man?
50. What principles are to be observed in the insertion of Artificial Teeth?
51. What properties are requisite in materials for a Base for Artificial Teeth?
52. What are the properties requisite for Metallic Dies and Counter-Dies, and what metal or alloy is best?
53. What is the best method of attaching Artificial Teeth?
54. Give the method of alloying Gold.
55. Method of refining Gold.
56. What are the common Alloys of Gold?
57. Give the method of obtaining accurate models for the insertion of Artificial Teeth.
58. Name the various styles of Artificial Teeth, with the advantages of each.
59. How soon after the removal of the Natural Teeth, should Substitutes be inserted?
60. What are the duties of the Dentist to his profession?
61. What means should be employed for extending the sphere of usefulness of the Dentist?

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SCALE OF PRICES ADOPTED BY THE  
CENTRAL OHIO DENTAL ASSOCIATION

At the Semi-Annual Meeting, held at Wooster, Nov. 14 and 15, 1865.

MECHANICAL

Full Set of Teeth on Vulcanite Base . . . . . \$50 to \$75

Half Set of Teeth on Vulcanite Base.....	25 to 40
Partial Set, Single Tooth, Vulcanite Base.....	8 to 10
Each Additional Tooth, Vulcanite Base.....	2 to 3
Silver Plate, same as Vulcanite.	
Full Set of Teeth on Gold Plate.....	\$150
Half Set of Teeth on Gold Plate.....	75
Partial Set, Single Tooth.....	15
Each Additional Tooth.....	6
Temporary Plates, full set, Vulcanite or Silver.....	\$30 to 40
Temporary Plates, half set, Vulcanite or Silver.....	15 to 20

## OPERATIVE

Gold Fillings, simple, each.....	\$ 2 to 10
Gold Fillings, compound, each.....	10 to 25
Tin and Amalgam Fillings, simple, each.....	1 to 5
Tin and Amalgam Fillings, compound, each.....	3 to 7
Inserting Pivot Tooth.....	3 to 5
Extracting, each.....	50c to 1
Administering Chloroform and Extracting one Tooth.....	3
Each Additional Tooth.....	1
Preparing Mouth for full set, (To be credited on Permanent Plate).....	10
Preparing Mouth for half set, (To be credited on Permanent Plate).....	5

Jas. Armstrong, Bucyrus  
M. DeCamp, Mansfield  
A. W. Maxwell, Galion  
D. W. Smith, Shelby  
W. F. Semple, Fredericktown  
Saml. Wagner, Galion  
G. W. DeCamp, Mansfield  
D. B. Grossman, Mansfield  
I. A. Court, Bucyrus  
H. J. Cressinger, Ashland  
J. M. Rhoads, Wooster  
Wm. Mitchell, Mansfield  
Geo. W. Smith, Norwalk  
C. M. Kelsey, Mt. Vernon  
Wm. E. Dunn, Delaware

J. B. Beauman, Columbus  
D. B. Cressinger, Upper Sandusky  
J. D. Moody, Dalton  
H. C. Fowler, Columbus  
J. W. R. Myers, Wooster  
R. McDowell, Wooster  
B. J. Jones, Wooster  
J. Boyer, Orrville  
B. F. Barclay, Dalton  
H. M. Edson, Mt. Vernon  
E. Chidester, Massillon  
Jno. R. Swingley, Bucyrus  
M. A. Spencer, Doylestown  
A. R. Lord, Shelby

### Shell Crowns for Teeth with Short Bites—Troublesome Cases

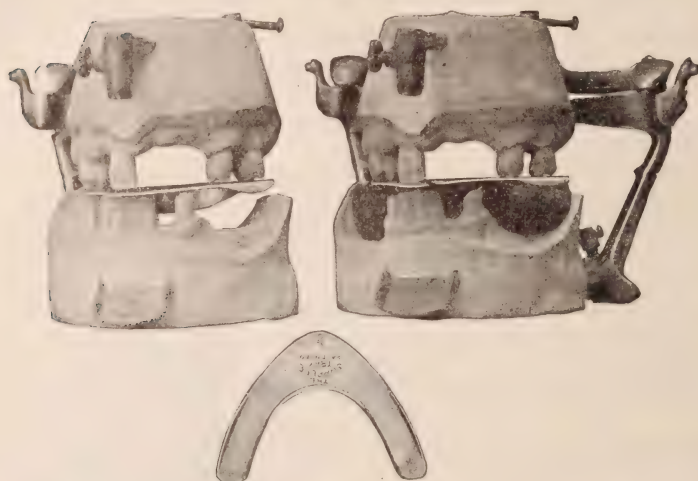
When band is fitted, cut it down to root level, and across occlusal solder a piece of 24-k. gold; return to mouth and have patient bite to see that she can close. Take impression, contour with wax and cast with 22-k. gold, and you will have the satisfaction of knowing you have not to grind root should crown prove too high. Any error must be to occlusal of pure gold. The object in using pure gold is to have something soft which will give to opposing teeth if necessary when the patient first closes. Sufficient space must be secured between pure gold and opposing teeth to allow ample thickness of gold.

—N. W. White, *Commonwealth Dental Review*.



## PARTIAL LOWER COMPOUND IMPRESSIONS WITH THE MOUTH CLOSED

BY SAMUEL G. SUPPLEE, NEW YORK



In our leading article of the May issue bearing the title reprinted above, there appeared, on page 334, an illustration of an upper case instead of a lower one. Readers interested may make their number complete and correct by cutting out cut and title printed herewith, and pasting same over those incorrectly used in the May number.

—Editor SUMMARY.

## BACKING FOR STEEL FACINGS\*

BY P. A. HAAS, D.D.S., CLEVELAND, OHIO

Cut a piece of gold (22-28) size of facing and with a wheel-bur cut slit in center.

To make lug use a piece of (22-30), about  $\frac{1}{4} \times \frac{1}{2}$  in. Cut the barbed end off a broach, and place the tapered end of broach in the center of this piece of gold; with a flat-nose pliers form the lug around the broach, tapering one end so it easily will slide into the facing. Then place the lug in the facing, and with a separating stone cut the extending gold in a triangular shape, so it will pass into the slot in the backing. Bend over ends and solder them to backing.

6609 Lorain Ave.

\*Given as a clinic, Rehwinkel Dental Society, Chillicothe, Ohio, March, 1919.

. THE "Y" GIRL,

BIG SISTER TO THE AMERICAN DOUGHBOYS—AN "HONEST-TO-GOD  
AMERICAN GIRL" THEY CALLED HER

Being big sister to four million soldiers was no small job, but the Y. M. C. A. girls who undertook it found that it was a satisfying one, for however the American boys had teased their sisters at home, pulling





their hair, and mimicking their airs, they treated their "Y" sisters in France like veritable queens.

There were twenty-five hundred of these big sisters, girls who donned the uniform of the Y. M. C. A., sailed across dangerous seas, and landed in France to brave hunger, fatigue, exposure and shell fire, just for the sake of "doing something for the boys." Some were college girls, some were gray-haired mothers, some were society girls, some were working women, but all knew and loved that specimen of the human race, the American boy, and all went over to dedicate themselves to that boy's happiness and welfare.

And the American boy responded by adopting the "Y" woman as his favorite heroine. Wherever she was, the crowd of khaki was thickest. Whatever she said, went. No matter what she looked like, she was always beautiful to him. Whatever she wanted, she got. The A. E. F. had found out some of the ugliness of war, but it was just as quick to discover its beauties. And the girl in the "Y" uniform was regarded as a special, extraordinary blessing.

The "Y" woman earned first place in the soldier's heart by being to him anything he wanted. If he were depressed, she cheered him; she was always a jolly sort, and good fun. If he were elated she helped him celebrate. If he wanted to talk, she became an ear. If he wanted something to eat, she could always rustle it for him. If he wanted a word of sympathy or advice, she gave it. Or if he just wanted to look at an American woman for the pleasure of it, she was there, with her American smile, her American-made clothes, and she was the best thing to look at in all France, take it from the doughboy!

### ODE TO LITTLE WILLIE

BY ALPHONSO IRWIN, D.D.S., CAMDEN, N. J.

**L**ITTLE WILLIE seems to be very much neglected just now, so we will pay a passing tribute to his memory.

Little Willie had a *hobby*. He was very fond of riding *his* hobby. Almost every day he would practice the "Goose Step," or mount *his* faithful steed, clad in military suit, with clanking sword and jingling spurs, and big boots and shining helmet; and ride boldly forth before the multitude. In those days it was *easy* to be a *hero*, to *pose as a mighty ruler and a big chief*.

Little Willie's hobby was *bossing*. He had toys and playthings just like any other boy, but Willie's toys must be soldiers and sailors, armies and navies, diplomats and kings; his playthings must be swords and guns, revolvers and bayonets, cannon and bombs, *Big Berthas* and torpedoes, submarines and flying machines, *Treachery* and *Scraps of Paper*. He loved to play the *bully* over weaker nations and smite them with his *mailed fist*. But his *chief* delight was to hiss on the dogs of war to fight, while he stayed in a safe place and viewed the combat. Next to keeping

a whole skin for himself and saving his precious health, he *adored* unleashing the *Beast* to *ravish* fair lands and *fairer maidens*. Nero, Judas Iscariot and the Borgias fell off their perch, and Satan lost his job by the Rape of Belgium, the Tragedy of Serbia, the Massacre of Armenia, and the Crucifixion of Russia.

The screams of innocent babes and helpless children; the shrieks of agonized mothers; the moans of helpless old men; the death rattle of the wounded, and the *din of hospitals bombed*, were music in Willie's ear. The sinking of Lusitanias, the massacre of nations, and the destruction of empires was *fun* for Little Willie. When the Germans won battles, Little Willie danced for joy upon the sands of the seashore; and, like Little Jack Horner, he fell so violently in love with himself and his deeds, that he boasted that the Germans would outdo Attila himself in spreading devastation, committing bloody deeds, horrible crimes, and revolting reprisals; so that not only "Where the feet of a German trod, grass should not grow in a thousand years," but that the atrocities of Attila should fade into insignificance in the twilight of history, when compared to the vengeance which his mighty hosts should wreak upon his enemies. With subtle words and bombastic speech, with blatant blasphemies and sacriligious doctrines, with hymns of hate and ribald songs, with bloody orgies and slaughter of innocents, with unspeakable crimes and wanton cruelties, with colossal destructions and hideous infamies, this gilded monster, *worshipped* as the war-lord by servile creatures, fulfilled the prophecy of his career; for with intrigue, insurrection and invasions, prisons, poisons and pestilence, he sought to overthrow established governments and destroy the *peace* of the world.

*Parbleu!* He would take no "*nonsense*" from the United States when this war was ended. *Prosit! Hoch der Kaiser!* Brittanique, Belge, Francais, Italian, et Americain!

The life of his foes, who dared to oppose him, *God's elect*, whose earthly title for the rabble was the *Kaiser*; or, who dared to stultify German Kultur, the quintessence of human perfection; or, who dared to take up arms against the rule of the German over the world—the life of such foes should be made a horrible nightmare of woe and want, pain and penance, stripes and slavery, compared to which *Hell* would seem like *Heaven*.

But now Little Willie has had all his toys and playthings taken away from him and he is hiding behind the skirts of Good Queen W . . . . ., of Holland, whom he once figuratively threatened to spank severely if she did not mind him and do as he told her. As he peeps cautiously out of the folds of her dress, he sobs convulsively, "I didn't do it; the other fellow hit me first. Where is my hobby? *T'aint fair! Give me my hobby!*"

The boy who contemptuously casts aside his own mother for a hobby must be expected to *lack wisdom* as a man; the same man who lacks



*wisdom* must be expected to *lack foresight* as a ruler; the ruler who *dis-honors* a Bismarck, the builder of an empire, must be expected to *lack vision* as the *preserver* of that empire.

So the *self-lauded, self-appointed, self-annointed* co-laborer with the *Almighty* in ruling the world, sinks naturally to his Lilliputian level in the person of Little Willie.

If Little Willie had fallen fighting bravely at the head of his German legions, he would have been worshipped for all time as a Demi-God, and his name would have gone down through the ages on the pages of history beside the names of Cyrus, Alexander, Caesar, Charlemagne, and Napoleon; but alas! Little Willie became scared. He stole treasure from his Capitol, and ran away stealthily to hide in Holland. Meanwhile he amuses himself and his playmates, *sawing wood!* Mein Gott In Himmel! Trying to ingratiate himself with the *Proletariat*, since the Militarists and Junkers have *repudiated him*.

Now it is Little Willie's turn to get a spanking, while his empire is passing through the pangs of travail in striving to give birth to a litter of little republics instead of Little Willies.

Epitaph: *Hic stanneum Deum jacet:*

Here sleeps a tin god!

We close this slight testimonial to this *self-exalted* Deity of an Odinized Religion, with the prediction that a similar attempt to yoke the world will be made within another century, after the egotism of the German people is sufficiently inflated, their preparations for war made, and a *Titled Mountebank* found to "Sic" them on.

#### HISTORY LESSON

There are altogether too many people in this country afflicted with *Aphasia*. LEST WE FORGET!—forget the *real* culprits, those "Higher Up," when inflicting penalties for causing the world conflict, and punish subordinates only, who were simply executing the orders of their superiors, in many instances. The war is not ended; only the first chapter is closing. Rapine, fire, and sword, famine, pestilence and devastation are still raging. *History repeats itself*; does the *world want this chapter repeated* again, in a century yet to come out of the womb of time?

The penalty for murder is death. If a subject murders one, he suffers the penalty, but if his ruler slaughters *millions*, he escapes. There is no international law to fit the case. *A grand argument to boost Bolshevism!* The Allies won the war; now the politicians must get busy and lose it. Apollyon rebelled against Jehovah. He was cast out of Heaven into Hell, although there was no international law to fit the case. The blood of *innocents* cries aloud for justice! *What guaranty* can the world have of a *Permanent Peace* when *ranking culprits* escape punishment?

*Que diable avez vous?*

425 Cooper Street.

# SUGGESTIONS

CONDUCTED BY F. R. CHAPMAN, M.S., D.D.S., COLUMBUS, OHIO

(To Our Readers: Give others the benefit of your practical suggestions by sending a description of them to Dr. F. R. Chapman, Schultz Building, Columbus, Ohio.)

## Solder For Aluminum Plate

A French patent has been issued for an aluminum solder, which consists of aluminum 95 parts, copper 2 parts, antimony, bismuth and zinc, each 1 part. The aluminum must be protected by a flux, viz., a thin layer of phosphoric acid.—*Translation by H. Prinz, Pacific Dental Gazette.*

## Polishing Vulcanite Work

Cones made from old corks of the desired size are very much superior to those made from felt. They cut faster, do not absorb so much water and are very inexpensive. They do not require as fluid a polishing material, hence they save clothing and laboratory surroundings from being soiled by the flying pumice.—*F. W. F., Pacific Dental Gazette.*

## Chloroform and Rosin Solution

Four grains rosin. Three drachms chloroform.

In making this preparation use the rosin that is used by violin players on their bows. Care must be taken that the solution does not become too thick due to the evaporation of the chloroform.

—*E. S. Best, Journal, N. D. A.*

## Use Cocoa Butter

Use cocoa butter as a protection against the dehydration of synthetic fillings or restorations when later dental work is done in the immediate vicinity. Particularly is this protection against drying out imperative if the area is placed under the rubber dam. Silicate cements should never be allowed to "dry out." A checkered surface results with distinct loss of translucency and a lightening of shade.—*Dental Quarterly.*

## To Locate a Root Canal

Sometimes when we have lost the course of a canal, apply a small drop of iodine, allow it to remain for a few moments and then remove it with alcohol. A small amount will penetrate the unopened canal and by placing the transilluminating lamp alongside the tooth it will so illuminate the inside that we can easily locate the tiny dark spot which is the entrance to the canal. Then by placing a very rigid instrument on this spot we can force our way into the remainder of the canal.

—*E. S. Best, Journal, N. D. A.*



# SOCIETY ANNOUNCEMENTS

## Tennessee State

The Fifty-second Annual Meeting of the Tennessee State Dental Association will be held at the Hotel Hermitage, Nashville, September 4, 5 and 6.

From all appearances our program promises the greatest meeting ever.

JAMES J. VAUGHN, *Chairman Publicity Committee*

## Association of Military Dental Surgeons of the United States

The annual meeting of the Association of Military Dental Surgeons of the United States will be held at New Orleans, La., October 20th-24th.

R. W. WADDELL, *Secretary- Treasurer*

347 Fifth Avenue, New York.

## A REPORT OF FRENCH-BELGIAN RELIEF WORK

Our campaign for raising funds for French and Belgian dentists is now well under way and is meeting with hearty support by the profession. It is evident that American dentists realize that they have an opportunity to be of great assistance to their professional brothers at the time of their greatest need. Contributions to June 1st amount to \$1,705.47

It has been ascertained that adequate equipment for the average French and Belgian dentist can be obtained for \$500. The League hopes to secure a contribution from each State of at least this amount, and each dentist established will be designated as a beneficiary of a certain State. He will thus be made accountable, as it were, to the State named and a periodical report rendered if so desired. In other words, each State may take one or more dentists under its wing, as it were, and through this plan have individual as well as collective interests in this great work. Individual contributions will be grouped so that each donor may be informed of its ultimate use in order to lend a personal touch to our work.

Captain Blake A. Sears, of the Replacement Depot, Dental Corps, St. Hignan, France, states in a recent letter that: "L'Aide Confraternelle is O. K. They are doing a good work and much praise should be given them." This is an organization of French and Belgian dentists through which the League will operate.

Kindly look over your unused equipment and send a list of what you can spare, including materials also, to the office of the president of the League, 131 Allen Street, Buffalo, N. Y. Do not delay, but bear in mind that many instruments now idle and rusting may bring bread and life to our suffering brothers.

J. W. BEACH



# NATIONAL DENTAL ASSOCIATION ANNOUNCEMENTS

**I**N ACCEPTING THE HONOR of entertaining the National Dental Association, October 20-24, New Orleans feels that it can discharge the responsibility in a manner most satisfying to every delegate. This will be one of the most important gatherings of the year and every effort shall be put forth to impress upon the visitors that the famed hospitality of the South is yet a dominant factor in its life.

In New Orleans, 1919 shakes hands with 1719 every day.

One side of the city is a hustling, swarming American metropolis.

The other side is a page from yesterday; a soul-stirring relic of by-gone centuries; a glimpse far into the background of time; an old canvas daubed with the mellow colors of France, Spain, England and America, blended into a harmony of history.

Fabulously wealthy in authentic historical episodes, New Orleans offers to National dentists an opportunity to study a famous past which no other American city affords. The scenes of history, the buildings of history on the sites of history are vital and living, preserved through two centuries for the eyes of 1919 to view as the eyes of 1719 viewed them.

What will you see in New Orleans?

This, my friend, and much more:

Scenes of the Battle of New Orleans, on Chalmette field; General Sir Edward Pakenham's headquarters in which he died of wounds after the battle; levee scenes where Farragut steamed up the Mississippi to find millions in cotton and molasses ablaze along the levees; the old Cabildo whose stone-paved rooms Lafayette trod, under whose roof took place the formal transfer of the province of Louisiana from France to the United States; the ancient St. Louis Cathedral where General Andrew Jackson bowed his head in the "Te Deum" that celebrated his victory in the Battle of New Orleans; Jackson Square where landed the exiled Acadians made immortal by Longfellow in *Evangeline*; French Market, gathering place of slaves and their mistresses in the dim, dark past; Old Absinthe House, built in 1798 and still a favorite resort; the house built for Napoleon, who was to be rescued by a Louisiana crew; the old French Opera, the first ever built in America; Jean Lafitte's blacksmith shop and the Archbishopric, the oldest original building west of the Alleghanies.

Nor are these all the historical settings in New Orleans. There are streets lovely with the lace-like arabesque of iron work galleries made by Creole artisans. There are white-pillared houses with broad galleries



of ancient times. There are parks that were plantations. There are restaurants and coffee houses descending through five generations of chefs from father to son, with the old quaint customs.

And while old New Orleans, because of the charm of its ancient tradition and its romantic history offers the visitor a rare opportunity for enjoyment, modern New Orleans none the less affords a big attraction.

Fourteen miles of steel and concrete, weather protected docks, facing the greatest inland harbor of the world; gigantic warehouses and grain elevators, equipped with all the machinery which modern science has invented; a thirty-two foot deep navigable canal stretching out through the very heart of the city from the banks of the Mississippi to the shores of Lake Pontchartrain, providing water frontage for all manufacturing sites; great shipbuilding plants already at work, employing thousands of men on the banks of this canal; a wonderful climate, assuring twelve working months to each year, a perfectly-drained and sewered city with hundreds of miles of paved streets, rat-proofed homes and yards—this is partially the story of modern New Orleans—the New Orleans which the rest of this country knows so little about!

Its people have seriously taken the big tasks of a new day and their dream is to make certain the prediction of a great man who recently visited us when he said:

"The city is destined soon to become not only the Second Port but in all probability the second City of America."

This is the half-told story of the old and the new New Orleans, the story which such a limited number of people know. It is the story of a great American city, "living, breathing and growing greater every hour."

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Now, right now, turn over a few pages and read the announcement of the publication of Dr. Chalmers J. Lyons' book on "Fractures and Dislocations of the Jaws," a book that you and every other progressive practitioner simply must have in his library; for one reason, because it is the only work of the kind attempted in recent years; for another, because it is the only book on the subjects treated that can claim modernity; and, if another reason can be needed, because it contains all that is known to date on its branch of oral surgery. Dentists have distinguished themselves in the treatment of such injuries, particularly during the late eruption in Europe, and the best of their experiences is recorded in this book for the first time. The chapter on Diagnosis, including the X-ray, is alone worth the price, which has been made ridiculously low in comparison with present high costs of almost everything—\$2.00. Read the announcement; then send along your order, either direct to the publishers, or to your dealer, or hand to your dental salesman.

## PRELIMINARY ANNOUNCEMENT OF THE 1919 PROGRAM

NEW ORLEANS, LA., OCTOBER 20-24, 1919

## PROGRAM OF THE SECTION ON ORTHODONTIA AND PERIODONTIA

TUESDAY AFTERNOON, 2:00 P.M.

"An Analysis of the Various Principles of Orthodontic Treatment that have been Advocated during the Last Fifteen Years."

By J. A. Cameron Hogan, Richmond, Va.

"Necessity for Oral Prophylaxis and Radiology in the Practice of Orthodontia."

By F. M. Casto, Cleveland, Ohio.

"Observations Upon the More Recent Developments in Periodontology."

By Arthur H. Merritt, New York, N. Y.

"Why the Field of Prophylaxis is Marked with a Lack of Enthusiasm."

By Dorothea A. Howes, Washington, D. C.

WEDNESDAY MORNING, 9:00 A.M.

"Plurality in Etiology of Periodontoclasia."

By John O. McCall, Buffalo, N. Y.

"What to Extract, and What Not to Extract with Reference to Infections Involving the Periodontal Membrane."

By Louis D. Corriell, Baltimore, Md.

"An Analysis of Case Characteristics with Reference to the Selection of the Most Efficient Form of Appliance for Treatment."

By A. H. Ketcham, Denver, Colo.

"The Problem of Retention."

By C. A. Hawley, Washington, D. C.

## PROGRAM OF THE SECTION ON OPERATIVE DENTISTRY, MATERIA MEDICA AND THERAPEUTICS

## FIRST SESSION

"The Prevention of Chronic Mouth Infection." (Illustrated with stereopticon slides.)

By Arthur D. Black, Chicago, Ill.

Abst.—This paper will consider briefly the pathological changes in cases of chronic alveolar abscess and chronic pericementitis, discuss the causes and take up methods for prevention. Extensive studies of radiographs of root fillings will be reported, and means of simplifying treatment and root-canal technic presented. Particular stress will be laid upon procedures to prevent periodental infection.

Discussed by H. E. Friesell, Pittsburgh, Pa.; A. H. Hipple, Omaha, Neb.

"X-ray in Dental Practice."

By C. Edmund Kells, New Orleans, La.

Discussed by H. B. Tileston, Louisville, Ky.; Howard R. Raper, Albuquerque, N. M.

## SECOND SESSION

"Some Recommendations for the Sterilization and Filling of Infected Roots."

By Weston A. Price, Cleveland, Ohio.

Discussed by Clarence J. Grieves, Baltimore, Md.; Percy R. Howe, Boston, Mass.

"The Gold Inlay."

By R. H. Volland, Iowa City, Iowa.

Discussed by Wallace Wood, New Orleans, La.; W. L. Fickes, Pittsburgh, Pa.

## PROGRAM OF THE SECTION ON HISTOLOGY, PHYSIOLOGY, PATHOLOGY, BACTERIOLOGY AND CHEMISTRY—RESEARCH

## FIRST SESSION

"How Mouth Infection Affects the Kidneys."

By Thomas B. Hartzell, Minneapolis, Minn.

"A Phase of Dental Caries."

By Percy R. Howe, Boston, Mass.

"A Biochemical Study of Bacterial Metabolism in Its Relation to the Denser Tooth Structures."

By Samuel E. Pond, Cleveland, Ohio.

## SECOND SESSION

"A Dental Histo-Pathological Study."

By Harold Box, Toronto, Canada.

"Physiology and Pathology of Special Interest to Dentists."

By J. J. Sarrazin, New Orleans, La.

"Studies of the Variations in Susceptibility to the (so-called) Rheumatic Group Lesions and to the Influence of Oral Focal Infections."

By Weston A. Price, Cleveland, Ohio.

## PROGRAM OF THE SECTION ON PROSTHETIC DENTISTRY AND CROWN AND BRIDGE WORK

## SPECIAL ANNOUNCEMENT

As only two half-day sessions can be given to this Section, it has been deemed best to dispense with long exhaustive general papers and discussions, as more definite information can be given by selecting men to cover as many of the vital phases of this branch of dentistry as possible, with a view to standardizing technical procedure.

In addition to the papers and illustrations, the essayists will give individual clinics.

## FIRST SESSION

## PROSTHODONTIA

"Scientific Interpretation of Muscular Control of Mandibular Movements."

By George H. Wilson, Cleveland, Ohio.

Syn.—The dental profession and anatomists generally are not clear on this subject. Dr.



Wilson has been doing research work along this line for some years, and is now ready to present his findings to the profession. Owing to the importance of this subject in its relation to denture construction we are fortunate to have it presented to us by a man of Dr. Wilson's ability and experience.

"Surgical Interference for Preparation of Malformed Edentulous Mouths for Construction of Dentures."

By James P. Ruyl, New York City.

Syn.—Demonstrates technic, using motion pictures for removing protruding gum tissue, irregular alveolar process, and other deformities in order to simplify complicated cases by providing a firm foundation upon which to build artificial dentures that will be more efficient and more beautiful.

#### CROWN AND BRIDGE TECHNIC

"Construction of Cast Clasps for Partial Dentures and General Consideration of Other Methods of Retention and Attachment of Vital Teeth for Removable Bridge Work."

By Louis J. Weinstein, New York City.

"Porcelain Jacket Crown Technic."

By A. L. Legro, Detroit, Mich.

Syn.—Demonstrates a definite technic for making comparatively simple this most esthetic, as well as most valuable prosthetic restoration for the conservation of the dental pulp.

#### SECOND SESSION

##### PROSTHODONTIA

"Selection of Artificial Teeth for Prosthetic Restorations."

By P. C. Lowery, Detroit, Mich.

Syn.—Clearly demonstrates one of the most important phases of dentistry which a large majority of dentists do not seem to appreciate as much as they should. The doctor shows that it is much simpler to harmonize tooth and face form than it is to adapt the face of your patients to your ideal tooth form.

"Correction of Malocclusion in Artificial Dentures."

By M. M. House, Indianapolis, Ind.

Syn.—Demonstrates with precision the highest type of efficiency in artificial dentures.

#### CROWN AND BRIDGE TECHNIC

"The Gold Shoulder Crown Technic."

By Wm. H. Elliott, Detroit, Mich.

Syn.—This technic of the most widely used restoration in dentistry is definite, accurate, and simple.

"Attachments for Vital Teeth in Fixed Bridge Work."

By Forrest H. Orton, St. Paul, Minn.

(Dr. Orton's reputation as a technician and teacher of teachable technic is so great that no dentist can afford to miss an opportunity to hear him lecture.)

"Mandibular Movements and the Forms of

Artificial Bicuspsids and Molars Necessitated Thereby."

By Prof. Alfred Gysi, Zurich, Switzerland.

"Mandibular Control."

By J. Leon Williams, New York City.

### PROGRAM OF THE SECTION ON ORAL SURGERY, EXODONTIA AND ANESTHESIA

#### FIRST SESSION

Symposium: "Apicoectomy."

"Its Indications and Contra-indications and Root-Canal Technic." (Illustrated with stereopticon slides.)

By Thomas B. Hartzell, Minneapolis, Minn.

"Surgical Technic of Apicoectomy." (Illustrated with stereopticon slides.)

By Chalmers J. Lyons, Ann Arbor, Mich.

Discussed by: Thomas P. Hinman, Atlanta, Ga.; William L. Shearer, Omaha, Neb.; Carl D. Lucas, Indianapolis, Ind.; Clarence J. Grieves, Baltimore, Md.; H. A. Maves, Minneapolis, Minn.

"Nitrous Oxid-Oxygen Anesthesia in Oral Surgery and Dentistry."

By J. A. Heidbrink, Minneapolis, Minn.

Discussed by: Wm. H. Deford, Des Moines, Iowa; John W. Seybold, Denver Colo.; Boyd S. Gardner, Rochester, Minn.

"Tic douloureux—Etiology—Diagnosis—Treatment—Palliative—Blocking and Surgical."

By Rudolph Matas, M.D., New Orleans, La.

Discussed by Herbert A. Potts, Chicago, Illinois.

#### SECOND SESSION

"Impacted Lower Third Molar." (Illustrated.)

By George B. Winter, St. Louis, Mo.

Discussed by J. P. Henahan, Cleveland, Ohio; Harry W. Allen, Kansas City, Mo.; O. T. Dean, Seattle, Wash.; Roy S. Hopkinson, Milwaukee, Wis.

Symposium: "Block Anesthesia."

"Preparation of Solution."

By E. A. Litchfield, Humboldt, Neb.

"Pharmacology of Various Local Anesthetics."

By Samuel L. Silverman, Atlanta, Ga.

"Indications and Contra-Indications."

By Fred F. Molt, Chicago, Ill.

"Technic of Blocking."

(Most Important Injections.)

"Suggestive Therapy and Treatment of Abnormal Conditions During and Following Injections."

By P. G. Puterbaugh, Chicago, Ill.

"Diseases of the Antrum."

(Illustrated with stereopticon slides.)

By Charles H. Oakman, Detroit, Mich.

Discussed by R. Boyd Bogle, Nashville, Tenn.; Truman W. Brophy, Chicago, Ill.

# REGULAR CONTRIBUTIONS

## THE DENTAL SUMMARY THE MAGAZINE THAT HELPS

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### THE CLASPED DENTURE AS AN IDEAL REMOVABLE APPLIANCE\*

BY C. H. STRICKER, D.D.S., CINCINNATI, OHIO

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**I**N REVIEWING dental literature we find that much work has been done on the subject of eliminating foci of infection in the mouth.

These foci may be found *first*, at the root end and *second*, at the gum margin. The foci at the root-end are caused by faulty root-canal technic or pathological changes in the pulp due to improper protection and subsequent infection. Those at the gum margin are caused by infection due to neglect and subsequent pyorrhea, poorly-made filling restorations, and a lack of the application of scientific principles and skill in the construction of crowns, bridges and partial dentures.

Careful study has strengthened the conviction that a focus of infection in the mouth is dangerous, and that extraction and subsequent bone treatment is the means for completely removing the infection.

With the loss of teeth comes the question of restorations. These restorations must restore the masticating apparatus with its proper occlusion, without injuring the teeth left in position and the tissues enveloping these teeth. Today we are bending our efforts toward the preservation of the pulp. This is necessary to obviate the difficulties of root-canal work and its subsequent dangers of infected periapical tissue. The appliance most favorably thought of is one in which an untouched vital tooth is used as its supporting abutment. There is certainly no justification in using an appliance which involves the destruction or endangers the life of pulp or the tissues surrounding a tooth, when we can take advantage of a method of restoration which does not endanger the life of these important tissues.

Is the ideal arrangement through which lost organs of mastication are restored, a fixed bridge, a removable bridge, or a partial denture? The fixed bridge made according to scientific principles is very good where indicated. You would not restore a lost superior first bicuspid

\*Read before the Central Ohio Dental Society, March 1919.



by making a removable bridge or a partial denture. A fixed bridge with an abutment at each end is indicated and can be made to conform to the rules of efficiency, esthetics, physiology and hygiene.

There is a question in my mind as to the advisability of the removable bridge. The weakness in this form of restoration seems to be in the fact that there is created a ball and socket joint arrangement which means movement under the stress of mastication. The constant vigilance of the dentist also is necessary in making readjustments in this form of bridge work.

For the class of cases which requires the replacement of all or a greater part of the bicuspid and molars on both sides of the arch, the clasped denture made according to the technic later described in this paper is, I believe, an ideal form of restoration.

To be ideal this denture should be made so that there will be a minimum strain upon the teeth utilized as supporting and retaining abutments and the tissues enveloping these teeth must be preserved in a state of health and vitality. To do this it is impossible to use a clasp which is made to rest in the subgingival space, or a crown to which there has been soldered a part of some patented means of retention, or ferrules, or saddles which impinge upon the gingivæ and pericementum.

#### NORMAL HISTOLOGY

Before elaborating upon the effects of irritation at the gingival border, I shall endeavor briefly to give you a comprehensive review of the normal histology of the tissues which surround a tooth and are principally concerned in this discussion.

Immediately outside of the cementum of the root of the tooth is the peridental membrane which is constituted of white connective tissue fibres interspersed with a variety of cells, blood vessels, lymphatics and nerves. Its function is to anchor the tooth to the socket and to give support to the gingivus. This support is accomplished through the thickening of membrane forming what is known as the circular dentoid ligaments and which encircles the tooth at the cervix. It is this important ligament which is so much sinned against by the unskilled operative and prosthetic dentist. The peridental membrane is attached to the cementum and to the alveolus, which is the bony socket which supports the tooth by means of Sharpey's fibres. The external surface of the socket is compact bone and the body of the socket is made up of cancellous bone. External to the alveolus is the periosteum which converges with the peridental membrane and assists in the support of the gums. The gums consist of soft tissue noted for its compact, inelastic firmness, which spreads from the crests of the alveolar process and covers the alveolar ridges well down and away from the teeth in all directions. The basis of the gum tissue is a thick mat of inelastic fibres which is closely interwoven with the periosteum of the bone. The gingivæ com-

prises that soft tissue which arises from the crest of the alveolar process, including the crests of the septi, which pass between the teeth, invests the gingival portions of the roots of the teeth and rises about the gingival portions of their crowns.

Taken in full and undisturbed health, this tissue around the neck of the tooth thins away to a knife edge and lies very close against the surface of the enamel, but may be readily lifted from the enamel with a thin flat instrument disclosing the subgingival space. The gingivæ is divided into three parts: the body, the free gingivæ, and the septal gingivæ. The body consists of that tissue which rests upon the bony alveolar process. The free gingivæ and the septal gingivæ consists of that tissue which is grown upon the body and which encircles the gingival portion of the crown of each tooth.

#### FUNCTIONS OF THE GINGIVÆ

*First*, the gingivæ is a protective tissue. The teeth are dependent upon their soft tissue investment and their usefulness depends directly upon the strength and healthfulness of that investment. Normally, the gingivæ fill the interproximal spaces so that the food debris of mastication will be shed off and its lodgment will be prevented. This prevents the decomposition of the food around the teeth which would subject them to the ravages of caries and would give rise to other offensive and disease-producing compounds.

A second function of the gingivæ is the maintenance of the teeth in the line of the arch. This is accomplished by an even distribution of connective tissue fibres. A loss of tissue on one side of a tooth, through any cause, will break the equilibrium and a movement of the tooth will result. The importance of the gingivæ is clearly established and when we consider the serious diseases which have their beginning in this tissue, no effort for its preservation on the part of the operative and prosthetic dentist is too great.

#### HISTOPATHOLOGY

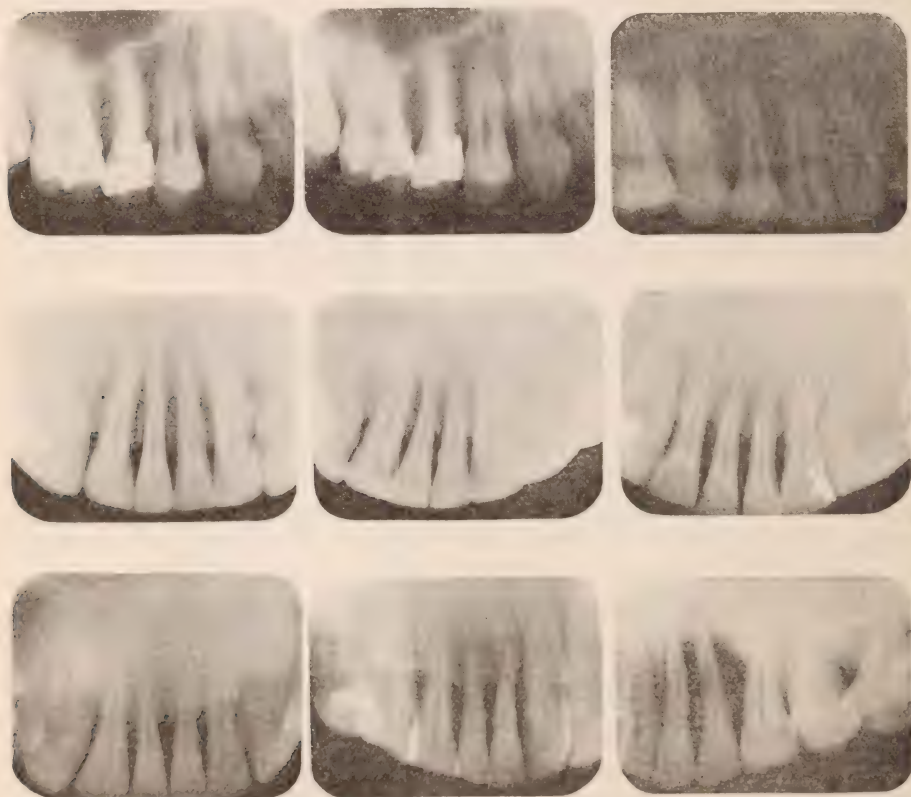
We have discussed the normal histology of the tissues which envelop the teeth, and have found that protection of the teeth is the chief function of the gingivæ. Formerly, it was believed generally that most of the cases of diseases of the pericementum and gingivæ were caused by deposits of calculi, but it is now conceded that the majority of cases are due to injuries and irritations of these tissues. Whether this injury and irritation is brought about by lack of contact, improper operative procedures, or by imperfect crowns, bridges or partial dentures, the histopathology is the same.

#### GINGIVITIS AND PERICEMENTITIS

As a result of pressure and irritation the margins of the gingivæ become red and swollen, which means that there is present an arterial hyperemia; this passes into a venous hyperemia which involves the deeper tissues constituting an interstitial gingivitis and a sluggish chron-



icity results which goes on to suppuration affecting the peridental membrane. The circular dentoid ligament breaks down and as the membrane detaches itself from the cementum it loses its grip on the tooth. The cementoblasts are destroyed and there is a gradual disappearance of the fibres of the peridental membrane. The next step is the resorption of the alveolar process which probably is due to the formation of clastic cells which excrete a bone-resorbing enzyme, or it may be due to a purely physiologic process of absorption following the severance of the membrane from the cementum. Then the cementum becomes a pus-soaked tissue analogous to necrosed bone, except that it can not be exfoliated, (as per Black), and it defies reattachment of the adjacent tissue and remains a constant irritant.



X-RAYS—Showing resorption of bone due to irritation.  
Slides showing sequence of changes.

The rapidity and the amount of this destruction is dependent upon the kind and the extent of the irritation. A deposit of calculus or a poorly-fitting crown will cause an irritation and a loss of tissue which may be arrested when the tissue which surrounded the tooth has receded to a new level beyond the cause of the irritation.

An old form of clasp, or that form of attachment previously mentioned, which impinges upon the tissues enveloping a tooth and which buries itself deeper into the tissues as settling occurs will continuously injure and break down the tissue, and must be avoided by the prosthetist if he desires to keep pace with the operative dentist and research worker or pathologist.

The prosthetist who is making restorations today along the same line of technic as was practiced ten years ago is not doing his bit toward the elimination of foci of infection in the mouth, but is more often creating them. To make the best restorations, study models should be made and the case carefully mapped out. In this way you can give the patient the best service. A partial denture should be given the preference over the fixed bridges and removable bridges. This partial denture should possess *first*, the strength to withstand the stress of mastication; *second*, it should restore normal occlusion; *third*, it should be of simple construction; *fourth*, it should, if possible, be built around a vital tooth without endangering the life of the pulp; *fifth*, it should not in any manner impinge upon the tissues enveloping the abutment teeth; *sixth*, it should imitate the natural teeth and should be in harmony with the teeth remaining in position in the arch.

Having this ideal in mind the question of the technic for the construction of an appliance which will measure up to these requirements suggests itself. The problem is, I believe, solved by following the suggestions of Cummer, Prothero, Wilson, Campbell and other noted prosthetists in the construction of the clasped denture.

#### THE CONSTRUCTION OF THE CLASPED DENTURE

The technic described will apply to a case in which there are eight inferior anterior teeth in position. This case is chosen on account of its simplicity and therefore the details of construction can be brought out more easily. The more complicated cases will be worked out from this basis.

#### SYNOPSIS

- I. The study models.
- II. The construction of the clasps and grasshopper-leg adjunct.
- III. The impression.
- IV. The cast.
- V. The bite.
- VI. Mounting on the antagonist.
- VII. Setting up the teeth.
- VIII. The final trial in the wax.
- IX. Flasking; packing; vulcanizing and finishing.
- X. The final adjustment in the mouth.

*The study models* furnish us the opportunity to study the abnormalities of the case and assist us in devising the proper means for overcoming these difficulties. They give the prosthetist an opportunity to visualize



the finished case. In making study models you establish the confidence of the patient and you are capable of advising the patient as to what should be done. They also can be utilized for the purpose of constructing the proper tray with which to take an accurate impression.



Slides showing Pericemental and Bone Disintegration.

*The construction of the clasp and grasshopper-leg adjunct.* In the properly-constructed clasp we have one of the best forms of retention which can be utilized for the retention of partial dentures. It does not necessitate the mutilation of teeth nor pulps; neither does it injure the pericementum and gingivæ. It is of simple construction, being either

swaged or cast and is quite inexpensive when compared with some of the patented forms of retention.

The swaged clasp is made by taking an impression of the tooth to be clasped in plaster of Paris. This impression is poured with Mellot's metal and a very accurate die is secured. The clasp is made of 26-gauge clasp gold, the metal being cut according to a tinfoil pattern which previously has been formed to the die of the tooth. The clasp must fit the bulbous portion, the middle third of the tooth and the line of force should be toward the cervix. The initial contouring is done with the contouring pliers; the final fitting is accomplished by hammering the clasp around the die with a small mallet.

Another satisfactory method for constructing a snug-fitting clasp is to burnish 36-gauge pure gold or platinum around the die or around the tooth in the mouth; then contour the clasp metal around the die to the proper shape; place the clasp metal over the burnished gold or platinum on the die and secure the two together with sticky wax. Remove from the die and solder. This produces a well-adapted clasp with a cushion-like lining of pure metal which reacts very kindly toward the tooth structure.

The cast clasp is made as follows: An artificial stone or inlay investment reproduction of the tooth to be clasped is waxed up in the proper manner to reproduce a properly-fitting clasp. The tooth and wax pattern are invested and the usual inlay procedure followed except that the clasp is cast of clasp metal.

The grasshopper-leg adjunct (quoting Dr. Dayton Campbell, of Kansas City) is not in itself an attachment, but is an adjunct to the snug-fitting clasp. The function of this device is not to compensate for settling but is rather a provision for the resiliency of the tissue in the area underlying the base. The stress of mastication is distributed between the spring and the mucosa, the stress falling first upon the spring, which yielding, allows the stress to be exerted finally against the mucosa itself; as soon as the stress is removed the spring is released from its strain of tension and the mucosa then returns to normal.

The grasshopper-leg adjunct is constructed of 16-gauge Ney's or elastic gold wire. Bend the wire at right angles, anneal and further bend it back upon itself to properly fit the case; one end of the wire is soldered to the clasp, the other end remaining free to be later attached to the lingual bar in this case or to another part of the denture as the case may require.

After the clasps and grasshopper-leg adjunct have been constructed, the next step is to take *the impression*. This is done according to the J. W. Greene method, with modifications. Select tray to fit the case by utilizing the study models as a guide. Cut out the anterior part of the tray to allow the teeth in position to protrude through the tray. Take impression in modeling compound and carefully manipulate the



muscles of the cheeks to obtain an imprint of the attachments; have the patient protrude the tongue. This may be repeated after heating the periphery to obtain more accurate muscle trimming. Cool the impression with a cold water spray and remove from mouth. Trim out the compound from around the teeth to be clasped and from the lingual surfaces of the teeth; introduce a thin layer of plaster of Paris and place in position in the mouth, having patient move the lips and cheeks and to raise the tongue.

The cast is poured with Spence's plaster which produces a cast four times as hard as plaster of Paris, and which does not possess the properties of expansion and compressibility.

The clasps with the attached grasshopper-leg adjuncts are placed in position on the cast. The lingual bar is adjusted to the case, being careful to place the bar and the free ends of the grasshopper-leg adjuncts away from the tissues in such a manner so that when settling occurs they will not impinge upon the tissues. The clasp with its attachment is secured to the bar with hard wax; this is then removed from the cast, invested and soldered. In using a swaged base or a cast base for the denture, the base can at this stage of construction be soldered to the lingual bar.

The lingual bar with its attached clasps is placed into position on the cast and the bite plate built of pink base-plate wax.

The bite is taken in the regular way and the case is mounted on the antagonizer. The upper cast is made either by taking an impression and pouring the cast or it may be poured into a carefully-taken bite.

After the case is mounted on the antagonizer, the teeth are ground into position, being careful to grind the neck of the tooth approximating the clasp so that it will not impinge upon the tissue enveloping the abutment tooth. The teeth are carefully antagonized in the regular way and held in position with base-plate wax.

The case is now tried in the mouth for final adjustment before vulcanization; make any changes necessary to bring about a perfect result.

The next step is investing the case, which is done in the same manner as any lingual bar case is invested, that is, by bringing the investment over the bar to hold it in position.

Before packing there is an advantage in burnishing No. 40 tinfoil around the gingival margins of the abutment teeth; this raises periphery of the denture slightly above the tissues in this region, and further eliminates the pinching action of the edge of the denture upon the tissues between this edge and the gingival border around the neck of the tooth.

The case after being packed, vulcanized and finished is placed in position in the mouth and again scrutinized. Patient is instructed to move lower jaw in all directions as in the act of masticating to determine

whether there are any high spots on the teeth which must be ground off. Carbon paper may be used to an advantage in locating these high points.

A preparation of emery dust and oil may be placed upon the occlusal surfaces of the teeth and the patient instructed to triturate the teeth; this is a very satisfactory method for obtaining a finished articulation of artificial teeth.

Case number two, which I ask you to inspect, is a saddle arrangement partial denture which is made to conform with the principles laid down in this paper.

The clasp is attached to the base by means of a straight 14-gauge clasp-metal wire. The indirect retainer prevents the tipping action of the plate.

In conclusion, I wish to say that the prosthetic dentist has a wonderful opportunity to do a great service for the semi-edentulous public in constructing partial dentures which are efficient, mechanically correct, sanitary and which will not irritate the gum margins.

Such a denture is in my opinion the ideal removable appliance.

116 Garfield Place.

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The Rochester Dental Dispensary has recently extended its services to the children of the rural schools of Monroe County. Rural school children will be either taken to the dispensary for attention or attaches of the institution will be sent to different centers in the county where dental clinics will be held. During the last week of the school year, Superintendent Burkhart sent one dentist with six dental hygienists to East Rochester, where the mouths of nine hundred pupils were carefully examined, all teeth thoroughly cleaned, a chart made of mouth conditions in each instance, and definite instructions given to children as to the proper care of their teeth. One entire week was devoted to this service. A school nurse is now notifying the parents of dental defects found and endeavoring in a systematic manner to secure their correction. This effective and practical co-operation between the school authorities and the Rochester Dental Dispensary was accomplished by District Superintendent M. B. Furman, of East Rochester, aided by the local Red Cross Chapter. The entire cost was \$180 or 20 cents per pupil, which was paid by the local Red Cross organization. All of the school district superintendents of the county will unite in extending this mouth hygiene campaign to their schools, which will include special attention to tonsillar and adenoidal conditions. A special equipment has recently been installed in the Rochester Dental Dispensary for dealing with nose and throat conditions. In New York State, school dental inspection is a part of school medical inspection under the general direction of the State Education Department. Dr. Burkhart is to be congratulated on the splendid services he is rendering to the school children of Monroe County.



## THE TREATMENT OF WAR INJURIES OF THE FACE AND JAWS IN THE BASE HOSPITALS OF FRANCE\*

BY IVAN E. SMITH, (FORMER MAJOR, DENTAL CORPS) MISHAWAKA, IND.

**M**Y FIRST THOUGHT upon being asked to read a paper before you, was to select a number of maxillo-facial cases that we had while in France and work out the many difficulties attending the completion of each case; but upon second thought I was of the opinion that you would be more interested if I should give you a resume in a general way of the work we set out to accomplish, along with some of the difficulties that were met with in the carrying on of our work until the cases were ready to be sent home.

I do not wish to convey to you the idea that we as a unit were advocates of any one set of principles, as many men of England and France were, for on being sent to France we were of an open mind in this work, and we carried that idea through all of our observing tours in different jaw centers; and when the time came for us to go back to our own forces, we found that by combining all of the various principles brought out by the maxillo-facial specialists of England and France, and using them where indicated, along with the teachings we had received here in the U. S., that our work was simplified to a great extent. It is a fact that practically every maxillo-facial worker in France and England, especially England; has one set of principles for the care of those injuries, and would not diverge from that plan, regardless of the nature or severity of the case.

The original and only maxillo-facial unit composed of M.D.s and dentists was sent to France early in the Spring of 1918. After some journeying around over France as casuals, along with short-time observations in English and French hospitals, we were sent to England, where we worked and observed for two and one-half months in hospitals wholly devoted to reconstruction work of the head and face. It was in those hospitals that we were first brought face to face with actual war injuries and I sometimes look back and wonder what most of us would have done had we not received the training that we did, for upon our reassignment to our own hospitals in France, where we were placed in charge of our respective departments, with the training we received, we were equipped to care for our men in a more intelligent manner.

The English treated us most respectfully, and I shall look back on that period as the most profitable one I ever have spent.

\*Prepared for the Indiana State Dental Association, June, 1919.

The original plan upon reassignment to the U. S. hospitals was to place one team, a surgeon and a dentist, in each hospital. A certain number of hospitals were placed in what was called an area or section. In each area was a consultant who acted in an advisory capacity over the hospitals in his group and he in turn was advised by a consultant over all the areas. Those men were of great help to us when we were finally reassigned and placed in charge of the maxillo-facial department in our own hospitals and found that the men who were originally selected as our team-mates had been sent to the front on general operating teams, and as the big drives had begun and the cases were coming to us in numbers this made our work all the more difficult. Then too, we lacked organization in our department, equipment, supplies, laboratory mechanics, and assistants. In due time we were able to secure a great amount of the supplies and equipment through the Red Cross, and we were able to work more efficiently than at the start, although there never was a time from the beginning of the July drives until the armistice was signed that our department was not taxed to the limit.

The maxillo-facial department at Base Hospital No. 15, was organized along these lines—the surgeon and dentist in charge, with a surgery, five general wards of eighteen beds each, three special wards, four day, three night, two special, and one dressing nurse.

All maxillo-facial cases sent to Base Hospital No. 15 came under the jurisdiction of the department and were placed in one of our wards, giving us complete control over every maxillo-facial case, and at the same time simplifying our work in caring for them.

The care of the wounded in general as to our procedures in various cases was governed by those in charge of the work in each hospital, which were governed by a few cardinal principles correlated by our observations while with the British and French along with some of the principles as taught us by our own pioneers in this work.

Practically all of the cases received at Base Hospital No. 15, which was a hospital in the advanced area, were sent to us from mobile and evacuation hospitals on hospital trains, although some were sent to us direct from field hospitals by ambulance. I wish to say that the work of the various mobile and evacuation hospitals, although of a temporary nature, was very good, under the conditions that most of it was done. In fractures they ligated the lower jaw to the upper by means of Angle's wire, or by bands cemented on the teeth and connected with arch bars, using rubber bands to ligate the lower to the upper. Their real object was to place the injured parts in a position of rest and prevent any undue displacement or contraction until they could secure their permanent appliances back at the bases. The primary plastics that were attempted a few hours after injury by the advanced hospitals were of a high class and very few completely broke down.



The variation of the cases as they came to us was quite remarkable, not only because of the nature and severity of their wounds but also the length of time they had been wounded. We received them anywhere from two days to five months after their injury, as a general rule; but in a few isolated cases only were their injuries over three weeks old. The wonderful endurance of our boys which only army training can give them, made our work much easier than would be the case in civil life. They respond to treatment about twice as quick as the average individual does.

During the time that convoys were coming in we were on duty day and night, and as the wounded were brought to us their wounds were examined, charted, position of X-rays ordered, as well as the future treatment was determined, and if their condition necessitated an immediate operation they were sent to the surgery.

In taking up the treatment of maxillo-facial wounds, I wish to emphasize the fact that conservative surgery was just as necessary in war injuries as it is in civil surgery. I have seen, since my return to the States, several articles on fractures in which it was stated that in war injuries of the face, a debridement of the wound was done in which every portion of necrosed or devitalized tissue and bone, muscle or skin was removed, and also an attempt made to trim away all tissues which had been touched by the missile, saying it was done to prevent gangrene, gas gangrene and tetanus. I know of two surgeons in an advanced hospital who tried to do just that thing on two jaw cases. I might add that those two men did not perform any more operations. Debridement was done on wounds of the body, but it was not done on wounds of the face, nor did we have any gas gangrene; the wonderful blood supply of the head and face takes care of that, and tetanus is taken care of by prophylactic means administered at the first aid stations.

In managing fractures of the mandible and wounds of the face, our first and foremost consideration was free and adequate drainage in every case. Next, was removal of all foreign bodies. Our first plan was to remove only those that were a source of trouble at the time or in close approximation to some vital organ; but we soon found that practically all of the foreign bodies were sources of virulent infections manifesting themselves some weeks later. We then made it a practice to remove all foreign bodies possible at the first operation. We found quite a few foreign bodies lying loose in the antrum.

All teeth in line of fracture, broken-down roots and pieces of teeth were extracted except those teeth in a segment, in which there would be danger of dislodging a fragment of live bone. After some union has taken place the necessary teeth can be extracted with no danger to the patient in the way of permanent injury. Our next consideration was the readjustment of the injured parts. All pieces of bones were restored

to as near their normal contour as possible, although the general contour of the bone was considered rather than the individual fragment. All live pieces of bone were saved and in case of some doubt as to the advisability of removing small fragments, they were left for several weeks and then a curettage performed if it was found that they had finally necrosed. In case we did remove any bone we were sure not to remove any of the periosteum.

We relied on general anesthetics for practically all of our operations. Many contend that this is not good practice in wounds of the face and jaws, because of the great amount of infection always present in those cases, some claiming quite a large percentage of pneumonia from this practice. Personally I believe a general anesthetic ranks far above the other anesthetics, because you have perfect control over the case. Few of you can realize the extreme nervous tension in which those boys came to us, unless you have actually seen them. In the second place, you eliminate one of the worst conditions with which we had to contend, namely trismus; and if it is necessary for you to get in the mouth where there is marked trismus present no amount of blocking will overcome the locked condition which the jaws are in. Third, by the use of a general anesthetic you are not running the danger of further infecting tissues by injecting fluids into tissues where there is a great amount of infection already present; and, finally, pneumonia from general anesthetics, is practically nill, provided the infections are properly controlled before and after operations and the patient is given proper post operative treatment. To prove this statement I have only to cite you to our own hospital which ranked fourth in number of cases cared for, with not one single case of pneumonia.

It is true that local and extra-oral anesthesia has quite an application in those cases where there are large plastics to be done in which there are no infections present and the jaws have been properly splinted.

After the organization of our department had been completed and we were supplied with the proper number of mechanics, we made it a rule that all fractures should have their splints in loose within eight days after their entrance; and it was only in those extreme case that we diverged from that rule. There is no argument against the fact that the sooner those cases are splinted, regardless of swelling and other existing conditions, the quicker will be their ultimate recovery; and the parts are more freely movable at that time than any other in view of the fact that no union has taken place. By using the slower method you not only prolong the final recovery of the patient but that method is more painful and in time is bound to fail in getting the patient's close co-operation, which is very necessary.

Our plan that we endeavored to carry out in treating our cases was to combine the various splints and methods of splinting as we had seen



them used, being careful not to become attached to any one class of splints; and I believe that in this manner we were able to adjust ourselves to the individual cases and our results were much more gratifying than if we had one set plan for all cases.

It is the general contention of most men that in care of fractures the consideration of union must be abandoned in favor of maintaining correct occlusion and alignment of the jaws, while a few disregard that idea and strive for bony union regardless of the amount of loss of bone tissue, the malocclusion being taken care of by dentures and appliances rather than bridge over loss of bone with grafts. We chose the former plan and never diverged from that except in two cases. The splints we employed were quite limited in number and quite simple in construction.

Fractures, especially war fractures, can be classified under two general heads: Fractures without loss of substance and fractures with loss of bony substance. The position of the loss is not of much consequence except in the posterior elevator fractures in which there are no teeth in the posterior fragment to connect with; the position of fractures to a great extent determines the class of splints to be used.

There are three general kinds of splints, the Vulcanite, Swaged and Cast. The first two can be disposed of, although the Vulcanite splint can be used on the more simple cases; but it is quite bulky and it takes just a trifle longer to construct a cast splint than it does a vulcanite. The construction of the swaged splint takes too much time by far even to consider it, although there are some arguments favoring its use. We adopted the cast splint at Base 15, because the cases were coming back to us in such numbers, we did not have help of any kind, and after some little time decided on the use of the cast splint because of its simplicity of construction, and it is more easily adapted. It is a better-looking splint and it takes one third of the time that it takes to construct a swaged splint.

There are also many arguments for and against the open- and closed-bite splint. I think each has its place and the cases under normal conditions should be selected with some sense of judgment. For the cases that were to be sent home there was only one course for us to take. England we all know lost many men at first because they were transported across the Channel with closed-bite splints fixed and in view of that fact we constructed either open-bite splints and fixed them or opened the closed-bite splints and ligated vulcanite blocks between the upper and lower jaws.

Under normal conditions I prefer the closed-bite splint in most fractures for there is no margin of error, and one always knows whether or not the occlusion is correct; while with an open-bite splint, although I am sure that the bite has been opened anatomically and the X-ray shows good alignment, yet I never feel quite satisfied that some error has not

been made. We used the cast interdental splint either closed or open bite in practically all fractures except the most simple ones at the symphysis, in which case only the single splint was constructed. All fractures of the mandible were treated in terms of the upper jaw.

The closed-bite splint is adaptable to all cases of fractures of the mandible except those in which there is a large loss of substance, either bone or soft tissue, that will require future operations, either plastic or bone implants, or in the case of post-elevator fractures combined with a muscle injury of some sort.

In the use of the closed-bite splint, instead of soldering the lower to the upper and fixing it in that manner, we connected the two by means of a tube and split posts, which gave us the advantage of being able to open up the case if necessary; and at the same time held the jaws very firmly. Some placed small hooks on both the upper and lower and ligated them by means of Angle's wire.

The open-bite splint is especially adaptable and quite necessary in those cases where there is a plastic operation or a bone implant to be done. Naturally in an operation of that kind a general anesthetic is given, and with the mouth open that problem is taken care of and at the same time the injured parts are held in a firm position. It greatly simplifies the operator's work, and it is quite simple to build on appliances to maintain a stretch of the tissues and prevent any undue contraction and formation of additional scar tissue.

The open-bite splint is adaptable in fractures of the condyle or coronoid process, with injuries to the temporal muscles, or to the muscles of mastication, and prevents one of the most difficult problems we had to deal with, which was trismus. In many of our maxillo-facial wounds there were no fractures, but there was either a loss of tissue or some severe muscle injury; and in practically all those cases we constructed splints for that type of injury to prevent trismus and overcome any muscle contraction or unnecessary scar tissue. For many of our trismus cases we used two sticks of wood tapered to a point at one end, with a block of wood between them at the middle as a fulcrum, with strong elastics on the end. They were used by the men at regular intervals and proved quite beneficial.

We used the open-bite splint very successfully in those cases where there was a loss of bone-tissue, in which the posterior fragment had no teeth to attach to, in order to control the fragment with no teeth present. A metal saddle was constructed for the fragment and attached to the splint on the anterior fragment by means of a lock device, which allows for the lowering or raising of the posterior fragment and to correct its relations to the normal alignment of the lower jaw. It is much more accessible than is the closed-bite splint.

The open-bite splints were supported by small metal bars, two on each side, and locked by means of screws passing through the uprights.



All splints were fixed by black copper cement, which not only held very firmly but also maintained a healthy condition around the gingivæ.

Impressions for the construction of cast splints were taken in modeling compound, the fragments being taken separately. With the use of modeling compound you do not subject your patient to the pain and discomfort that you do in taking plaster impressions. It is much more simple to take them and since practically all our cases had extensive wounds in the mouth, by using compound we did not get pieces of plaster in the wounds; and regardless of any arguments brought out, cast splints will fit as accurately with the use of compound impressions properly taken as with the plaster which was issued us in France. In making that statement I know quite well that there are many of you who will feel that it is quite ambiguous; but I am sure that if any of you ever had used the plaster of Paris that was issued to our department that you would feel that compound of any sort was a god-send. We always could harden the compound, but the plaster of Paris never would set.

As I have said before the fragments were cast separately and united on the anatomical articulator in terms of the upper jaw. We secured our measurements by the use of a caliper instead of a face-bow, and if used properly it is quite simple to secure correct relations of the lower jaw to the upper. It was quite impossible to secure a face-bow of any description, and for that reason we were forced to use the caliper.

There are several metals which can be used in the construction of cast splints. I much prefer the Melchor metal to either the silver or Victoria. It fuses at a lower temperature, has more tensil strength than the other two and is quite easy to solder to. We cast our splints with a Solbberg apparatus sold by Claudius Ash & Sons. It is of the steam-pressure type and resembles the old hinge method. A three-inch ring was used and an investment compound made up of Silex and plaster, which worked very successfully. We obtained our heat by means of a Brophy gasoline blow-pipe. I shall not tell you how often we failed before we were finally successful, but we did get a good one after many failures, and in the end were able to cast parts of several splints in one ring.

We endeavored to maintain normal occlusion in every case, regardless of the fact that there was or was not a loss of bone tissue, contending that it is a much better plan to trust to either a growth of new bone or bone implants and grafts; and if those failed it was a better plan to depend on a good fibrous union and prosthetic restorations than it was to extract all of the teeth in order to correct a fault and rely on dentures.

For fractures of the maxillæ in which there was considerable displacement the patient was anesthetized and the fragments placed in their proper position, being held in their correct relations by means of a temporary splint in which an aluminum tray was filled with soft modeling compound with two bars attached, one on each side. The bars were

supported by means of a headgear until a permanent splint could be made. In a number of our fractures of the upper jaw the zygomas were also fractured and often impacted. For relieving those impactions we used a cowhorn forcep and found it quite useful.

Fractures of the nose were supported in normal alignment either by placing a silver wire through the nose and clamping on each side by means of lead shot, or by placing a metal splint on the upper anterior teeth with a bar attachment which was attached to vulcanized plugs and placed in the nose, the plugs being serrated to take care of the secretions. For maintaining fractures of the maxillæ we used in practically all of our cases a Kingsley cast-metal splint. The bars were removable. For a head support a sweat band out of a trench helmet was used; it answered the purpose quite well and they were very easy to obtain. It was impossible to secure any headgear except the trench helmet until after the armistice was signed, when we were then able to secure a very good one. It proved to be quite a successful one, combining all of the good qualities of several headgears on the market at the present time and leaving out the undesirable ones.

One of the most useful operations I know of and one that helped us out of many difficulties was the controlling of those fractures of the mandible in which it is quite impossible to hold the fragments in a splint, as for instance a fracture on both sides of the mandible at about the region of the mental foramen with a possible loss of substance on one side in which the hyoid muscles exert a downward and backward pull into the floor of the mouth. The operation I am speaking of is the circumferential wiring first brought out by the late Dr. G. V. Black, later taken up by Col. V. P. Blair; and when we were in England we found that Mr. Cole was claiming it as original with him, having never heard of its being used before. It is quite adaptable in every class of fractures of the mandible except post-elevator fractures and fractures at the angle back of the last tooth. It solves the difficult problem of fractures when there are no teeth present on the lower jaw. By using the ordinary denture or a saddle of vulcanite or metal constructed to the ridge of the mandible, it will take care of what seemed to me a difficult problem.

Its application is unlimited and it can be maintained for weeks with perfect safety and with no infection following whatever. It is quite a simple operation and consists in making a very small incision at the lower border of the mandible, with a curved trocar and canula following the bone on the lingual just as close as possible into the mouth at about the gum margin; the trocar is removed and either a 16- or 18-gauge silver wire is passed through the canula; the canula is then removed, and then passed on the buccal side at its fold, following the bone as close as possible, down through the opening made for the first wire; the wire is passed from below, the two ends brought up over the splint and twisted



until the fragments are in their proper position. This takes the place of many primary wirings and removes any chance of infection and necrosis which results in practically every case of compound fractures in which a primary wiring is attempted.

The primary wiring of compound fractures was discouraged and only a few were attempted. At first some came to us from the mobile and evacuation hospitals and it was quite necessary to remove all of them at once because of the great amount of infection and necrosis present in every case. Several severe secondary hemorrhages resulted from that practice. It is not a necessary procedure in any new fracture.

If the fracture is of long standing and the wounds are perfectly clean with no opening of the wound into the oral cavity, the wiring of bone can with safety be attempted with some chance of success.

Bone implants and grafts were not attempted in the A. E. F. We were always far below our quota of empty beds and in view of the fact that it would take several months before a case was ready for this operation it was decided that just as soon as their wounds were clean and their fractures splinted that the boys should go back to the States where there was plenty of bed space to be given them.

No plastics were attempted, unless the injury was of a very few hours' duration, until after the fracture had been splinted and the infection had been controlled. We depended on bacterial counts of wounds to some extent but were guided rather by the clinical appearance of the wounds than by a bacterial count. Wounds that are not sutured primarily fall apart, causing them to seem much larger than they really are. Facial supports in bringing the flaps together and relieving muscular tension aided future plastics, and likewise were used after plastics had been done in supporting the sutures until repair had taken place. These supports were made by using ordinary hooks stuck to the skin with collodion on both sides of the wound and laced together by means of rubber bands. They were quite useful for holding dressings in their proper position.

Hemorrhage and shock were not frequently met with; the method of treatment was no different than in civil life. Hemorrhages that we had to contend with were all of a secondary type, and naturally the result of either sepsis or a foreign body in close approximation to a vessel. Hemorrhage was controlled first by packing or ligation of the vessel which was the source of the hemorrhage. The carotids or their primary branches were controlled by ligating at a distance. The wounds were packed very lightly. In case the wounds were packed they were changed daily, free dependent drainage was secured and the sepsis controlled. We had very few cases of shock although the patients came back to us in a highly-nervous state. The shock cases were held in the advance hospitals until their conditions warranted their removal. Quiet, heat

and intervenous transfusions of normal salines were given in the few cases we had.

We did not have the marked success with Dakin's solution in treating wounds of the mouth that they had in other parts of the body. I think that can be explained by reason of the fact that in wounds of the face it is quite impossible to carry out the technic outlined for its use which is necessary to get results. We were able to use Di-Chloramine-T with very fine results when used properly and fresh solutions were kept on hand. It is quite easily explained in view of the fact that it is an oily solution and will adhere to the tissues for some time. We also used hypertonic salts solutions and normal saline.

We used an electric light bulb quite successfully, the heat and light promoting healthy granulations and encouraged healing to a marked degree.

For irrigations we used a two-gallon glass jar with a long rubber tube attached and hung it above the patient's bed. From this the patient received his irrigations of normal salines every hour and in some case every half hour. I am quite sure that frequent irrigations cannot be too strongly recommended for that class of injuries, as it naturally keeps the mouth and wounds clean and aids to a marked degree in cleansing the fearful infections which always are present in wounds of the mouth, especially if they have gone several days without treatment.

Because of the scarcity of eggs and milk the diet question was quite a difficult proposition to handle. We did not have a great variety of liquid diets and I received most of the time one dozen of eggs each day from the Red Cross which had to be divided among one hundred and twenty-five patients so that naturally most of the boys lost out; but our dietitians were quite resourceful and made up some very good ones.

Liquid diets were given every two hours during the day and every four hours at night for the acute cases, while for the convalescents we maintained a special table in which all foods were minced, and with their liquids they were able to get along very nicely. We urged fresh air for all that could be out-of-doors.

It is quite surprising how quickly those cases responded, and their quick recovery is due no doubt to their wonderful resisting powers due to army training; and then of course the face is quite the most favorable place of the body for a wound because of the wonderful blood and nerve supply to those tissues.



## HOW ABOUT THESE NEWER THINGS IN DENTISTRY ?

BY FRANK W. SAGE, D.D.S., CINCINNATI, OHIO

**F**IRST, AS TO IMPRESSION-TAKING; the dentist who is very busy—or very lazy—is going to adopt that new method, if really an improved one, which is easiest. Most of us ask the other fellow to try the new thing and let us know. However we often find we must do it ourselves, really to find out.

We have the Green-Supplee-Tench-Prothero-Hall-House impression methods, at points overlapping each other. (Apologies to any new men omitted.) Dr. Prothero's method of using compound is simple and takes little time. This method may be described in a word; the impression is taken, dried, trimmed, held over small flame until softened all over, dipped into water not too hot, reapplied to mouth. Repeat, pressing to place lightly, holding very steady until strong adhesion is gained. (For full sets particularly. Have used it successfully for some partials.) Several repetitions may be needed.

Dr. Tench, of New York, read a paper last December, before the Ohio State Society, telling in an aside, how a plate made at a clinic adhered so tenaciously that Dr. Prothero had difficulty in removing it. I, myself made a full upper, using Dr. Prothero's method. Although the six anterior teeth were set against the gum, having no rim above, this held so fast that the lady returned three days later in alarm, saying she could not get it out. I thought I would tear out the mucous membrane before loosening it.

A month later the plate was not adhering quite so tenaciously. Words fail me to describe the inflamed condition present. Yet she refused antiphlogistic treatment; said it satisfied her, did not hurt. (One of the sort who insists on being the doctor!)

By way of experiment I made for myself two upper plates, supplying loss on both sides of all molars and bicuspid. One impression was in plaster, the other in compound, after Dr. Prothero's method.

Either plate does very well. I find, however, the first adheres quite well enough. The other requires rather frequent effort to reattach it. Loosens somewhat more readily, probably because I compressed the roof too much through pressure of the compound.

I also made a plate after the Hall impression method, which I imagine adheres a trifle better than the simple plaster-alone method.

My roof being normal, fairly deep, no soft tissues, probably afforded no real test of the compound-impression method. Wholly unnecessary.

I found in my own case, that I as easily became accustomed to a thick rubber plate as to a thin one; also, that it was unnecessary to bevel

the heel of the plate. The squared edge gave no annoyance whatever. The air chamber I found unnecessary.

A healthy bicuspid root remaining in place, I trimmed one of the plates around it. The result was that hard food hurt the tissues about the same. Made the second plate to cover root, relieving pressure on it, and liked it much better.

In taking one plaster impression, I pressed the plaster with my finger against the buccal surfaces, the result being that the plate chafed and hurt in those regions. The trimmed impression, after Hall method, gave a model and a finished plate, quite satisfactory; no chafing.

I have no sense of the plate's "pivoting" on the firm root left. I do not believe any plate remains strictly *in situ* during mastication. Nor is it necessary that it should so remain attached. It affords a certain relief to have it loosen occasionally. The wearer—I speak for myself—unconsciously acquires the trick of avoiding accumulations under the plate, or at least, any but of soft food.

Dentists need to grasp more intelligently than they usually do the significance of patients' complaints about plates. To know how well or how ill-founded the patient's complaint, would seem to require that the dentist should himself be wearing a similar plate or plates. We all know what it is to have patients return after weeks or months, shamefacedly admitting that the plate they thought unwearable is after all satisfactory. Yet only too often the dentist's statement that nothing but patience and perseverance are required of the wearer to make the seeming wrong, right, is a private admission to himself that he does not know what to do to better matters.

Exactly at this juncture is where we need carefully, conscientiously, to study our cases, and I venture to call attention once more to the fact that a lower plate that adheres well when the mouth is open, may nevertheless be all wrong. Look up the subject of "Closed-Mouth-Impressions," if you have such a case annoying you.

Many dentists who take dental journals and seldom read them, need to be reminded that every dental journal—THE DENTAL SUMMARY, at all events—has in the December issue an index of subjects and of authors worthy of attention in emergencies.

Now that we have our research men, we need another sort of "first-aid" man, one who will learn all that is to be known about the new things in dentistry, skim off all the scum, and give us the real gist of it. A man who will know how to combine three or four new methods, leave out what is useless, mere fancy, repetition, and simplify the balance for practical use.

The late Dr. Corydon Palmer, a genius who was an acknowledged leader in all departments of dental art, could have done this. I believe Dr. Hoff, of Michigan Dental College fame, could do it. If I knew enough about dentistry I could do it myself.



A dentist specially qualified, might devote all of his time to testing the many new ideas, inventions, in the various departments of dentistry. Why not raise a fund to support some all-round genius, who should give himself up to this field of examination? It might drive certain descriptions of articulators, face-bows, pulp resurrectors, and so on, out of existence, to the advantage of both dentist and dental supply houses.

What a lot of common-sense ideas we arrive at, after years of practice, at which the text-books hardly hint! Thus as to plumpers for filling out the shrunken cheeks: I take little stock in them. Patients old enough to have hollowed cheeks have also hollowed bones everywhere. If you make a full set of teeth for an eighty-year old patient, using plumpers, you probably have laid a snare for yourself. The patient finds an unwelcome fullness about the set; refuses to wear the teeth. Make your plate light and thin as consistent with strength; never mind the restoration of cheek-fullness. I believe this consideration to be utterly false, misleading. Could any treatment restore the hollowed-out eye-sockets, the sunken temples, the nasal alæ? Why then fill out the cheeks?

It takes a real dentist to do prosthetic work successfully. Half a century ago, when cohesive foil for filling teeth was driving the profession wild, "mechanical dentistry," then so called, was esteemed worthy of little attention. I challenge contradiction of my statement that more intelligence, more careful consideration of numberless details has ever been required, to do "mechanical" dentistry well, than to fill teeth with gold, make inlays—anything pertaining to operative dentistry. I say this after having for many years totally neglected this branch of dentistry in favor of gold filling.

As to impressions; whatever the material used, unless the impression shows indications of sticking, your finished plate will not stick. Lots of apparently perfect plaster impressions, will not at all do, and all for the reason just given. The Hall method certainly does give better results than the (apparently) most perfect plaster impressions taken by the old method. However, the real test is, Does it stick? My objection to this method is that the thinness of the plaster-layer over the black compound, renders difficult the separation after filling for the model. (The thin plaster sticks to the model.) Possibly I have not used enough oil.

I made for a prominent lawyer, an ex-governor of this state, two full upper dentures, using the repeating-compound method; both impressions adhered well; either plate when placed in the mouth, adhered tenaciously, after five minutes; but changing from one plate to the other, no adhesion at first, could be had.

This indicated that soft tissue was displaced in different directions in taking the impressions, nothing more. The tissues became adapted to the plates, not the reverse.

Now as to root treatment and filling, a subject which Dr. Hoff intimates, of late, has been overworked. I do not like the using of powerful drugs in root canals. Neither sulphuric acid nor formocresol appeal to me. If I use either, it must be after the apex of the root has been sealed. As to the late Dr. Callahan's rosin-in-chloroform treatment; at a supper given to Dr. Callahan, three years ago, in Cincinnati, he frankly admitted that he did not know whether his method was better than other tried methods. More than forty years ago a St. Louis dentist, I think it was Dr. Chase, introduced shellac varnish in alcohol, for root filling. Whether the method was fully tried I do not remember.

A Cincinnati dentist, Dr. R. Siegel, claims to have found, after fully experimenting, that the rosin-chloroform solution does not penetrate any better than chloropercha.

Years and years ago, a dentist rose in a meeting of the Ohio State Society at Columbus, and declared that mechanical removal of all root contents was positively essential, as preceding all treatment with odorants or germicides. This undoubtedly is true. It does little or no good to drench a root canal with powerful germicides, before such mechanical operating. Yet just here the other horn of the dilemma presents; if we penetrate putrescent root contents deeply, we risk exciting inflammation. Who then is able to judge just at what point of penetration we may expect medicaments to work effectively in sterilizing the part remaining? Dare we trust formocresol?

I strongly suspect that the extra-fine broaches and bristles of this later day, are responsible for some at least of the obscure cases of apical inflammation, through their penetrating the apical foramen. Be very careful as to using them. Wiping out with sterilized cotton, is safer. Yet who can twist a small enough strand of cotton to do this? I find it impossible to thrust even the most attenuated wisp into many canals.

Why is it that a very attenuated root canal, as the buccal canal of a molar, will oftentimes resist our most strenuous efforts to penetrate it, yet a few weeks later, we find it easily penetrated? It is simply that the undecomposed cellular tissue of the pulp is too dense to be penetrated oftentimes, even by a smooth broach. Try to thrust a barbed broach, especially, into fresh beefsteak, and you will readily understand.

In pressure anesthesia for removing a half-dead-and-alive pulp, or still more so, if the pulp be fully alive, severe extra-foraminal inflammation may ensue. This is due doubtless, to stretching the pulp, dragging it perhaps, from the extra-foraminal space, or through that space. Carefully twist the broach, to be sure of having severed the pulp near, not beyond, the apex, before removing.

The late Dr. McKellops, of St. Louis, once said that any dentist who would twist a broach in a root had more courage than he had. The modern broach however, is fairly reliable.



Many years ago the elder Dr. Black, of Chicago, affirmed that enlarged cavities in teeth, whether deep or shallow, were liable to endanger the living pulp. How then as to "extension-for-prevention?" as to preparation for the gold inlay? Do we need *always* to line our cavities? How about traces of arsenic in our cements, which traces should have been removed by the manufacturer, but were not?

I have come to trust nothing to chance. I always paint cavities which are to receive a cement-attached inlay, with a solution of chloro-percha, very thin.

I presume I will be regarded as an extremist, but I freely admit I destroy many more pulps than formerly. Dr. Logan, of Chicago, read a paper before the Indiana State Society, in 1913, in which he formulated a set of rules for deciding whether or not to devitalize, which formula took account, as I remember the case, of just how long a pulp had ached. I go by no other rule than the patient's statement that the pulp has become sensitive to heat, cold, the impact of food, or lesser indications. You cannot save such, excepting where the disturbance has been very slight.

I prefer devitalizing for various reasons, the least of which is not the favorable impression on the patient. A living, uncongested pulp is easily destroyed, without pain. You have then no history of a patient returning with a badly-swollen face, no report of sleepless nights, perhaps distant from any dentist, no grounding of distrust of yourself in your patient's mind. How much horror of dental operations is based on such experiences? The story of suffering is circulated, your patients fear to come to you, you have sown wildfire in your own camp.

Years ago it was the fashion with certain sentimentalists to get up in dental associations and expatiate on the sin of destroying something God-given—a tooth, or a tooth-pulp. That sort of guff has fortunately gone out of style. Dentists with such scruples might be expected to hesitate to pare a finger nail, in all probability!

We need a good deal more plain common sense in dentistry, as in politics.

62 The Groton.

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### Tennessee State

The Fifty-second Annual Meeting of the Tennessee State Dental Association will be held at the Hotel Hermitage, Nashville, September 4, 5 and 6.

From all appearances our program promises the greatest meeting ever.

JAMES J. VAUGHN, *Chairman Publicity Committee*

## SILICATE FILLINGS\*

BY J. D. WHITEMAN, D.D.S., MERCER, PA.

I IN CONSENTING to present the subject of silicate fillings at this meeting, I would disclaim any attempt to encourage an increased use of this material. I would prefer to be understood as making a plea for its more rational use; for, valuable as it is, and having a well-defined field in dentistry, capable of rendering most valuable service, its successful employment requires, as with any other material, *first*, a full knowledge of its physical properties in order to recognize its limitations, as to its resistance to stress; and, *second*, the exact conditions required during the mixing and setting process, to secure its maximum hardness, translucency and insolubility, as the margin of safety in all three of these properties is so slight as not to permit any variation from the ideal, either as to its manipulation or the indications for its use.

The slab must be of the correct temperature. The instruments should be such as recommended by the manufacturers. The rubber dam must be employed. To attempt its use without the rubber dam is careless, slovenly practice, and will not produce results worthy of the material.

It must ever be kept in mind that this is a very delicate and most exacting material, and positively will not admit of abuse.

The filling must be protected from the air by cocoa butter while setting, to prevent the evaporation of the water of crystallization for a period of at least ten minutes, and then five minutes before removing the dam it must be further protected by an ethereal varnish. Even then the surface may slightly disintegrate through exposure to the saliva—and for this reason the final finish always should be deferred to a subsequent sitting.

It should further be remembered that when the dam is applied over silicate fillings, the thorough drying of them even though they have been in the mouth for years, is very injurious, and may result in causing them to check; and for this reason, such fillings should be protected with cocoa butter or varnish during any subsequent operations.

It is sometimes observed that the surfaces of silicate fillings have chipped off; this is usually through faulty technic in insertion. In packing this material it must be made certain that the mass is made homogeneous and not laminated. This is accomplished, first, by making exactly the right consistency and then placing it into the cavity *en masse* if possible, with a sort of puddling motion to agitate the mass, causing any overlying portion to unite, thus making the whole mass homogeneous.

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\*Read before the Lake Erie Dental Society, May, 1919.



Now what are the indications for silicate fillings, what may be expected of them, and how do they compare with gold fillings and with porcelain inlays?

I would say; all proximal cavities in the incisor and cuspid teeth where the incisal angle is not involved, and all labial cavities as far back and including the second bicuspid, and that they are practically limited to these areas.

While of course we must admit that more permanent work can be done, even in such cavities, with gold foil, esthetic considerations, I believe, far overbalance the claim of increased durability.

The humanitarian side is also an important factor in favor of the silicate filling.

Now, how do they compare with porcelain inlays? Here again we must concede that, in the ideal porcelain inlay, dentistry has attained its highest achievement. Please note that I say the "ideal" or "perfect" porcelain inlay, and emphatically not the average inlay by any manner of means. The porcelain inlay has to commend it, esthetics alone, and judged from this standpoint the average porcelain inlay is a failure, a failure so complete that it would be hard to find a dozen dentists in the whole country today, who are using them at all.

The time and skill required to make a satisfactory porcelain inlay is such as to limit its use to the specialist, and to confine its application to that very limited class willing and able to pay the high fees necessary to encourage the development of the talent.

A silicate filling may be used practically wherever a porcelain inlay may be used and the cavity is prepared with far less loss of tooth structure. A silicate filling if properly inserted may be expected to last from five to ten years, with possibilities of even longer service.

Now while a porcelain inlay may last much longer than this, owing to its insolubility, the natural teeth will have grown enough darker as to so affect its esthetics as to largely neutralize its one greatest virtue.

We frequently hear of this material being used in cavities involving the occlusal surfaces of the bicuspids and molars. Its shortcomings, however, are such as to contraindicate its use in these locations where anything like the normal force of occlusion is to be encountered.

Silicate fillings often are accused of being dangerous to the dental pulp and frequently causing its death. I do not believe this to be true, although I will admit that I have observed many dead pulps under such fillings. Now why is it that we so frequently find the pulp to be dead under the silicate fillings? I am convinced that the explanation is to be found in the fact that we are using it in cavities that are so deep that we would not think of using gold or amalgam.

For instance a cavity in an incisor or cuspid so deep that we fear the death of the pulp under a gold filling, invariably will be filled with silicate, and we fear too frequently, without antiseptic or protective treat-

ment. Personally I am convinced that the silicate filling is as compatible with tooth structure as is oxyphosphate, which, until the introduction of silicates, headed the list.

It is a material worthy of our very best efforts, and if used with judgment and care it will prove itself, and indeed already has proven itself, a positive boon to dentistry, and I mean by that, to both patient and dentist.

The gold-foil filling saved teeth but it killed dentists. I doubt, with the increased demand for dental services of the present day, if it would be possible for the dentists of today even to find time to fill all the cavities with gold foil that are now being filled with the silicate materials, and it would most certainly be a great disappointment to the public if they had to submit to the long, tedious and painful gold-foil operations of a decade ago.

The silicate filling has created a most insistent demand for itself and this demand must be intelligently met.

And finally—to put too low a fee upon this service is to invite failure as well as a discredit upon dentistry. The public *demand*s the best and will cheerfully pay for it. Therefore I would again urge, on the grounds of honesty to our patients, honesty to ourselves, and honesty to our profession that we give the manipulation of this material our very best thought and talent and then be honest enough to charge an honest fee and thus stimulate in ourselves, and others, a desire to deliver a higher grade of service with this material, which so nearly approaches the ideal.

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### Setting Crowns and Bridges

Any crown or bridge may be firmly set, and still be removed at a later date without destroying either the piece of work or the supporting tooth or root. After the crown (esthetic) has been polished and is ready to set, the pin and plate is coated with one or two coats of chloro-percha, allowing each coat to dry before the next one is applied. Then try the crown in place on the root to make sure it can be seated. It is now cemented to place in the usual manner. Gold contour crowns, such as the shell crown must have all inside undercuts filled up with gutta percha, then warmed and placed over the tooth stump. After trying it in place several times to test its articulation it may be cemented in the usual manner. The Orton and shoulder crown is given a coat or two of the chloro percha on the walls that will be in contact with the axial and occlusal walls of the tooth stump. They are then tested and cemented to place in the usual manner. When crowns and bridges have thus been prepared they can be removed at a later date by simply heating them to soften the chloro- and gutta-percha and applying traction.

—F. W. F., *Pacific Dental Gazette*.



## SOME OBSERVATIONS ON THE LIMITATIONS OF NITROUS OXID-OXYGEN ANESTHESIA AND A RESTRAINING DEVICE FOR THE OBSTREPEROUS PATIENT\*

BY W. F. DRAMBURG, D.D.S., MILWAUKEE, WIS.

**A**SIDE FROM THE TITLE of this paper, it is safe to say that in ninety-nine and nine-tenths per cent. of cases there are practically no limitations to the use of nitrous oxid-oxygen, where either an anesthetic is indicated or where conditions are such as to necessitate the administration of an anesthetic regardless of existing pathological conditions. The degree of the anesthetist's skill and the condition under which he operates alone create the limitations.

In nitrous oxid-oxygen we have found one of the greatest pain-relieving agencies for the benefit of suffering humanity, and one that can be given under all conditions with the greatest degree of safety, providing it is administered by one who is thoroughly familiar with the technic of its administration. However, it is much to be regretted that up to the present time, out of the large number of practicing dentists who have taken up the use of this form of anesthesia, too few are using it successfully—due to the fact that insufficient time and study have been devoted to preparation for its application.

No one would expect to be able to insert a gold filling skilfully or to set up and finish an anatomically-articulated denture without having previously given several years of study to the theoretical and practical factors involved in the achievement of such tasks; nor to perform a difficult operation merely upon the directions of the most ideal textbook. In like manner, a successful analgesia or anesthesia cannot be accomplished by reading a general treatise on the subject, witnessing a few practical demonstrations and making half a dozen more or less disappointing attempts at administering these gases; yet this is what is being attempted every day by certain members of the dental profession, too lax to master the intricacies of anesthesia.

Their result spells failure and condemnation of what in reality, as a pain-relieving agent, ought to take the foremost position as a factor in building up a practice. From personal observation we all know that there is no branch of dentistry for which the public manifests a greater degree of appreciation than for that which aids in the elimination of pain, and the man who is proficient in this direction has no difficulty in building up a clientele. I wish, therefore, to impress upon the members of the profession the importance of a complete mastery of the science

\*Read during the Fourth Annual Meeting of the Interstate Association of Anesthetists, in conjunction with the Indiana State Medical Association, Claypool Hotel, Indianapolis, Ind., September 25-27, 1918.

and art of nitrous oxid-oxygen anesthesia, which will, in return, more than compensate them for the effort involved.

However, granting a high degree of skill on the part of the operator and ideal conditions of administration, there still remain certain limiting factors affecting results in the employment of this anesthetic from the standpoint of the dental practitioner. Diabetic or nephropathic patients may be classed under the head of limitations, as they are apt to fall into diabetic or uremic coma from which recovery is not assured, even after only a short anesthesia lasting only three or four minutes. In hospital service where urinary analysis is practical and available, such conditions may be recognized and dealt with accordingly, but in a private dental office a thorough physical diagnosis is impracticable for ordinary exodontia or routine operative dentistry. It is, therefore, advisable for the dentist first to acquire a history of the patient from the family physician, and if a large percentage of sugar or albumen is present, to employ conductive anesthesia in these cases.

Unless the anesthetist has had considerable experience it is unsafe to administer nitrous oxid-oxygen to children under five years, as they readily come out from under its influence, and are prone to sudden asphyxia, unless the anesthetist has sufficient knowledge and presence of mind to use the emergency oxygen valve and artificial respiration. Children are also subject to sudden death under anesthesia from status lymphaticus.

In the class of limitations also should be included such types of patients as chronic alcoholics, dope fiends, and individuals partially or wholly under the influence of alcoholic stimulants. These are, in most cases, difficult to control and to operate on with any degree of accuracy, due to their resistance, muscular rigidity, and a tendency to realism in their dreams and hallucinations, unless a restraining device is employed, or a hypodermic of morphin and scopolamin is given previous to the administration of the anesthetic. Owing to the utter lack of pre-anesthetic preparation, the average dental practitioner is obliged, so to speak, to snatch his patients right off the street, and it frequently occurs that patients will follow the old-time layman's course of preparation by imbibing two or three good high-balls so as to instill a little courage into their system previous to an exodontia operation. These are the patients who give events an unexpected turn, unless the anesthetist is fully prepared with trained assistants and a reliable restraining device. If conditions are detected early enough it is perhaps wise to discharge the patient for the time and have him return the next day in better form.

Having admitted that nitrous oxid-oxygen has certain limitations, it would seem appropriate, in connection with this subject, to consider the addition or the substitution of other methods of anesthesia. Not all cases being of one pattern we cannot depend upon a single agent for universal application. The human factor always must be taken into



account, and each individual case must be carefully studied, before deciding upon the method to be followed.

In prolonged dental operations, such as impactions of third molars, impacted roots requiring time and accuracy, or extraction of twenty to thirty teeth at one sitting, where the operator lacks the desired teamwork of trained assistants and ideal office facilities, and where the patient is not of the extreme apprehensive type, great advantage may be gained by the use of conductive anesthesia. This may be employed in such cases for the entire operation, or simply to complete the preliminary operative measures—the remainder of the work to be done under nitrous oxid-oxygen.

This method of combined anesthesia has the advantage of avoiding prolonged general anesthesia for minor details, thereby assuring a more rapid recovery, gives the operator a clearer vision of the field of operation in the oral cavity, eliminates excessive hemorrhage during the operative period, avoids the gagging and swallowing of blood incidental to a general anesthesia, and prevents immediate post-operative pain. Furthermore, in conductive anesthesia, either alone or followed by nitrous oxid-oxygen, we have the possibility of ideal results through a combination with novocain-suprarenin in the reduction or elimination of shock. Nitrous oxid-oxygen eliminates the shock of the conscious mind during the major portion of the operation, while the novocain-suprarenin eliminates the shock to the nerve centers usually caused by the traumatic injury.

There are many incidental factors which account for many failures in nitrous oxid-oxygen anesthesia. In some dental offices there is an absence of any proper system of arrangement, particularly with regard to the psychic effect upon the patient. The waiting room is commonly in close proximity to the operating room, so that any disturbing action or noise from the latter, due to hysteria and hallucinations, is conveyed directly to those waiting for the coming ordeal, creating an unfavorable and a lasting impression, producing a dread and a resistance very unfavorable for the successful administration of the anesthetic. The sight of an occasional nauseated patient or of the actions of a resisting one, accompanied by the presence of blood and the mess of surgical procedure, are impressions passed on by patients to some new friend or neighbor, aggravating the very psychological condition we are striving to correct.

In addition, as a causative factor of apprehension, there are, in some dental offices, repulsive surgical features, such as pictures of dissecting rooms with partially dissected cadavers lying upon the slabs, surrounded by a number of students clad in their white gowns, and, to complete the decorative scheme, two or three human skulls distributed about the room, objects giving more the appearance of a medical school amphitheatre than of a cozy, home-like waiting room, all have a tendency to create a state of mind unfavorable to a successful anesthesia. In the

operating room, likewise, all display of instruments and other armamentarium should be avoided. Gas cylinders should be kept in a separate room, and the gas and oxygen piped into the operating room; the gas apparatus and dental engine should be concealed in cabinets and not brought into view until the patient is anesthetized. In short, the office should not be a dental and medical exhibit, but rather should present as much as possible, a home-like environment, thereby inducing in the patient a quiet, restful and relaxed frame of mind.

To the above considerations might be added tidiness of the office, operator and assistants, and the ability to inspire the patient with confidence, by a care-free and cheerful manner, and by reassuring conversation as to the absence of danger, unpleasant sensations, failure to recover, and possibility of pain. The prime requisite for producing this psychological effect is that the operator must have the utmost confidence in himself and in the anesthetic. The patient, during these trying moments, can very readily sense any sign of weakness or want of confidence on the part of the operator.

So while the efficiency and safety of gas-oxygen is practically unlimited, when administered under unfavorable conditions its limitations may become unlimited.

Now as to the obstreperous patient. It is a fact well known to everyone using nitrous oxid-oxygen extensively, that some patients when under the influence of this anesthetic, will at times threaten to clean up the shop while laboring under some hallucination such as becoming involved in an imaginary argument or fight, thereby rendering operating extremely difficult and at times almost impossible even for the professional anesthetist. The effect upon the novice of such an experience is very discouraging. He is likely to join in the condemnation of nitrous oxid-oxygen, push his gas apparatus aside to become dust-covered, discourage his patients from enjoying the blessings of anesthesia, and go on extracting teeth in the same old way as his ancestors did.

Realizing these conditions and also admitting that I may have been somewhat deficient in mastering these difficult cases, I recently have devised a restraining apparatus for the obstreperous type of patients.

This device consists of a wide stiff leather apron to which two straps are attached on either side extending around the back of the dental chair and there connected by means of a buckle; this prevents one frequent source of trouble, namely the patient sliding out of the chair, which in the rigid condition of the patient (providing the operator is accustomed to work with patient in an upright position), frequently consumes a great amount of valuable time, thereby prolonging the period of anesthesia unnecessarily. The rigidity and extreme width of the apron distributes the pressure uniformly and widely over the abdomen and chest, thereby preventing too much pressure upon the diaphragm and avoiding interference with free respiration.



*Secondly*, I have attached to the device a pair of padded leather cuffs connected to the straps by means of a metal staple, so arranged as to slide back and forth on the straps, and adjustable to patients of various build and size. These prevent the patient from interfering with the operator by unconsciously swinging the hands and arms around or grasping the inhaler.

The cuffs are equipped with a brass post extending through the holes in the cuff-band, punched a short distance apart so as to fit snugly to wrists of varying circumferences, and locking by a small metal bar the same as used in locking doors from the inside.

This device can be quickly and noiselessly attached either before the anesthetic is begun or after the patient is partly anesthetized, being slipped in under the linen apron with which the clothing of the patient is protected against blood stains.

In case of patients whose work calls for especial accuracy or prolonged anesthesia, manifesting a tendency towards uncontrollability, I also use a pair of anklets attached to the foot rest of the chair by means of snaps. These in turn are permanently fastened to the chair with a leather strap slipped through a bracket bolted to the side of the chair. It is rarely necessary to use this.

I do recall one instance in which a big, powerful fellow raised both lower limbs high into the air, bringing them down with such force as to break the castings on both sides of the foot rest near the base of the chair, necessitating considerable expense in repairing the same.

The criticism and argument against this method of procedure no doubt will be the psychological effect upon the patient's mind, as causing increased apprehension.

Even though this may be an undisputed fact to a certain degree, I can truthfully state that I have employed this method in several hundred cases and so far have had only one patient who showed any symptoms of fear. In fact I have reached the point where I never undertake an exodontia operation on a man of any considerable physical strength without it. You may only have resistance in a small per cent. of the cases presenting, but you never can tell when it is going to occur. Even if the device may excite the apprehension of few patients, that is preferable to taking chances of having furnishings broken or of accidentally injuring an adjacent tooth or bridge through some unexpected move of the patient, thereby rendering oneself liable to a mal-practice suit.

This method of restraint is advocated only for extraction of teeth and is not necessarily to be used in all cases. A certain amount of tact and diplomacy must also be employed in order to dispel any apprehension the patient may manifest toward these measures of restraint.

In conclusion I would again point out a few of the harmful factors which account for some of the failures in nitrous oxid-oxygen anesthesia. Unpleasant sights, such as waste, unclean linen, blood, and instruments;

disturbing noises without and within the operating room, such as passing vehicles or banging doors; deficiencies in the operator's dress or deportment; neglect in properly loosening the patient's clothing or seating them comfortably, and many other seemingly trifling details may have a psychic influence fatal to the operator's success. A thorough knowledge of the physiology and pharmacology of nitrous oxid-oxygen anesthesia and analgesia; judicious consideration of the patients' individual requirements and peculiarities—pulse, respiration, color, and physical characteristics; a reliable and thoroughly practical apparatus and intimate familiarity with its working possibilities; a correct gauging of the patient's lung capacity instead of blind reliance upon an average percentage; placing the patient's body according to the requirements of the operation; proper adjustment of the inhaler; intimate familiarity with and correct interpretation of symptoms—all are prime requisites for success.

First National Bank Building.

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### A REMOVABLE BRIDGE ADAPTED TO SHORT SPANS WITHOUT MUTILATION OF SUPPORTING TEETH\*

BY CARL F. MORGENTHALER, D.D.S., HAMMOND, IND.

**T**HIS CLINIC is to demonstrate a simple form of removable bridge work, which, when judiciously applied, will give gratifying results to the patient. The bridge is suitable to short spans only, and rarely can it be used to supply more than one missing tooth. Occasionally in elderly people where the bite is not "hard," we may use the bridge to supply a masticating surface slightly larger than the width of one molar; but it must be borne in mind that the best results are obtained when the space occupied by the bridge does not exceed the width of one tooth.

The bridge consists of a saddle that is supported by two clasps which engage the teeth approximal to the space. A small lug rests upon the occlusal surface, and prevents the bridge from bearing unduly upon the gum.

This type of bridge is indicated only for mature patients and should never be used in the mouths of children. It is suitable only for the posterior teeth, upper or lower, and, as previously stated, its use should be limited to short spans.

The construction of the bridge is quite simple. A modeling compound impression is taken, allowing the compound to become stone-cold before removal. The impression is trimmed slightly in the regions corresponding to the disto-gingival of the anterior supporting tooth and the mesio-gingival of the posterior supporting tooth. The impression

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\*Clinic before the Indiana State Dental Society, June, 1919.



is poured with equal parts plaster of Paris and Taggart's inlay investment. An impression of the antagonizing teeth is taken and poured with plaster of Paris. The casts are then mounted upon a suitable articulator and the bridge formed in casting wax. The clasps are formed to engage the teeth slightly gingival to their largest diameter and may be extended nearly to the free margin of the gum. Two short lugs are made upon the occlusal surfaces of the supporting teeth. If there is not sufficient room to accommodate these lugs between the occluding surfaces of the upper and lower teeth when in occlusion, the enamel of the opposing teeth may be ground slightly to allow for a suitable space. A half millimeter of space is ample for these lugs. The wax is securely fastened to the cast and when the pattern is complete it is invested upon the cast. While it is possible for one to draw the wax model from the cast and obtain an accurate reproduction, there is too great danger of distortion, and better success is secured if the pattern is invested while waxed fast to the original cast.

The metal used for casting must be very hard and should permit of a slight spring. Almost any metal used in making cast clasps is suitable. The matter of selecting a suitable casting metal should be left to the judgment of the operator, but care should be exercised in the selection lest he choose a metal that will not be rigid enough.

By the method just described it is possible to supply masticating surfaces in many places without the slightest mutilation of the supporting teeth. The bridge is truly sanitary as the patient may remove it readily for cleansing.

Another advantage of the bridge is that it allows free and independent movement of the supporting teeth, since the clasps do not bind tight enough to prevent this.

*"The more people are encouraged to write to each other, the more contentment there will be in the world."*

—JOHN WANAMAKER

SOME PATHOLOGIC CONDITIONS OF THE MOUTH  
AND THEIR TREATMENT

BY CHALMERS J. LYONS, D.D.S.C., ANN ARBOR, MICH.

THE SUBJECT on which I am writing is one of tremendous proportions. It is one that has been given too little attention in the past by the general practitioner. It is a lamentable fact that in the examination of the mouth, as made by the average dentist, the discovery of carious teeth is uppermost in the dentist's mind and his examination is completed when the tooth surfaces have been explored. The thought of making an examination of the mucous membrane, tongue, tonsils, pharynx, salivary glands, etc., is not usually considered. Blair, in his text book on Surgery of the Mouth and Jaws, says "until the much desired cancer specific is discovered, it is mainly to the educated dentist grounded in general oral pathology, who makes a complete survey of the whole mouth that the medical profession and the public must look to reduce the now increasing death rate from cancer of the mouth."

The writer wishes then tonight to call to your attention some of the pathologic conditions of the mouth and their treatment and to emphasize the great responsibility that the educated dentist must assume in his respective community.

Making a judicial dental diagnosis is not always a simple procedure and very often the skill and ingenuity of the operator is taxed to the utmost in working out the chain of evidence upon which he must base his decision.

A clear understanding by the dentist of the value of symptoms of disease he sees and of those described by the patient is of vital importance in making up this chain of evidence. One of the advantages of the dentist with long experience over the younger man is the ability of the older man to grasp the essential details of the condition at once. Much of this ability is gained by a gradual process through years of practice and observation.

It is true that in recent years the X-ray has aided us materially in our diagnostic work around the mouth, yet too many men in our profession are depending entirely upon the radiogram in making a diagnosis. While we concede that the radiogram is indispensable in dental practice today, yet it should form only one link in the whole chain of evidence in formulating the diagnosis.

The history of present and past illness, signs and symptoms are very important in determining the diagnosis. It has been the observation of the writer that the best diagnosticians in both medicine and dentistry today are those men who have been trained to objectively and subjectively differentiate the pathologic from the physiologic and use the X-ray only as a further means of arriving at a definite conclusion.



Do not misinterpret the meaning here. The use of the X-ray must not be depreciated. Yet the plea which is made is that we must not overlook the fact that the radiogram is not the picture of the pathology, but only a record of the shadow of the tissues and the extent of the pathologic involvement which appears upon the film will depend largely upon the angle from which the radiogram was taken. This, you will readily agree, is not sufficiently definite to wholly rely upon in forming a judicious and conservative diagnosis.

#### PAIN

One of the most perplexing problems that confronts the general practitioner is obscure pain localized in the jaws. These pains are frequently referred from some lesion distant from the point of manifestation. Many times healthy teeth are sacrificed in the endeavor to eliminate the possible source of so-called neuralgia, when the source of irritation is remote from the seat of pain, but misinterpreted by the patient. Goldschider has put forth a theory that in the Gasserian ganglion there are certain nerve cells performing a dual role. These cells have either split fibres or two separate nerve fibres, one running in one division of the fifth nerve and the other in one of the other divisions of the same nerve; thus pain may be manifested in the region of an upper cuspid or incisor tooth when the source of irritation is in a lower molar. A short time ago the writer had a case of pain in an upper cuspid tooth when the source of irritation was found to be in a para-tonsillar abscess, or on a branch of the lingual nerve and referred to the upper cuspid on a branch of the maxillary nerve. It is not at all an uncommon occurrence to find referred pain from impact or unerupted third molars. How frequently do we find headaches relieved after the removal of impacted teeth? The practical lesson to be derived from this is that the dentist should be on his guard against a number of sources of error in diagnosis of pain and that these cases demand of the dentist a most thorough knowledge of the anatomy of the field in which he labors. A slight derangement of nervous function may produce the most unexpected consequences in the most unexpected places.

With our present methods of nerve blocking, if the source of irritation is in either the second or third divisions of the fifth nerve, a definite diagnosis usually can be made, by blocking off a section of each branch at a time and observing results.

In cases of severe tic douloureux, many times the teeth are sacrificed needlessly by the dentist in the endeavor to give the patient relief. This practice is so conspicuous that a very large majority of the patients that we see in the hospitals of the University of Michigan who have suffered with tic for any length of time, have edentulous jaws. This is a practice that is not at all justifiable. Our knowledge of dental and oral pathology should be of such a high order that no tooth in the head should be

sacrificed unless we are reasonably sure that the patient is going to be benefited.

Hutchinson, *London Lancet*, 1918, says: "The extraction of teeth with a view of relieving or curing true epileptiform neuralgia or tic douloureux is a pernicious and useless practice." There exists no valid evidence to regard trigeminal neuralgia as a spreading neuritis of dental origin.

It is contended by many able brain surgeons that the etiology of tic douloureux is of central origin and the elimination of the teeth would in no way be of any assistance in the relief to the patient.

Our experience in the past has been that alcoholic injections or even neurectomy for tic douloureux is of little more value than extraction of the teeth in offering permanent relief. It is the writer's opinion that operation on the ganglion itself, though attended with all of its dangerous sequela, is the only means of permanently relieving the patient.

Another type of referred pain in the inferior maxilla that is often perplexing to the general practitioner is that arising from an old syphilitic lesion. This is a referred pain from syphilis of the heart or aorta and is probably referred through the sympathetic system. It is not an uncommon condition and must be taken into consideration in running down these obscure pains. Such conditions improve under anti-syphilitic treatment.

In the opinion of the writer, syphilis is a greater curse to mankind than tuberculosis. There is probably no other disease that is as insidious in its progress with as far reaching effects as this disease. At the present time our one bright hope in the control of this disease is in the army and in segregation of those afflicted. Syphilis is due to the infection with *spirochæta pallida* and is only transmitted by contact. Consequently, it can only be controlled by segregation. A favorite site for the primary lesion or hard chancre is on the lip; it is also frequently found situated on the tonsils. The primary lesion is seldom found on the cheek or tongue.

In its incipient stage, it appears as a crack in the lip or an abrasion, surrounded by a thickening of the tissues, which is later destroyed by ulceration. This can be differentiated from certain forms of stomatitis in that the chancre is painless and usually causes enlargement of the lymph nodes.

Secondary syphilitic manifestations of the mouth are usually of an erythematous or ulcerative type, commonly seen on the oral pharynx as an inflammatory area, attended by little or no pain. The mucous patch may be observed on the edge and tip of the tongue, and on the dorsum of the tongue, uvula and fauces. These mucous patches frequently are found on the inner surface of the lips. They appear as large or small, either round or irregular plaques of a grayish white color covered by a sticky secretion.



These can be differentiated from the plaques of leukoplakia buccalis in that those from the latter can be traced as arising from a local irritation. Secondary manifestations of syphilis in the mouth may be differentiated from certain forms of stomatitis, Vincent's angina or other acute mouth lesions, in that the syphilitic lesions are not accompanied by much pain.

Tertiary syphilitic manifestations are frequently seen in the mouth as gummatous ulcers. These may be mistaken for carcinomata if on the cheek or tongue. On the tongue it usually will appear over the whole upper surface while carcinomata would be confined only on the edge and involve only one side of the tongue. Carcinoma of the mouth is frequently the site of an old syphilitic lesion. Jonathan Hutchins, Jr., informs us that in 30 per cent. of patients suffering from epithelioma of the tongue, a history of former syphilis can be obtained; 20 per cent. of epitheliomata of the tongue have their site on syphilitic inflammation.

Diagnosis of syphilis from mouth lesions is not at all a simple matter. The history of the patient is usually not reliable, for in the large majority of patients the knowledge of the presence of venereal disease is denied. The Wasserman test is the most reliable one at our disposal today. While all syphilitics will not give a positive reaction, yet it is very rare that a positive reaction cannot be obtained in the presence of active syphilis.

What is the dentist's responsibility relative to the syphilis? When this disease is so prevalent as it is today, when its sequelæ are not so far reaching, when it is so easily transmitted to others, is it sufficient for us when examining mouths of patients to simply look for carious teeth? There can be but one answer to this question.

A few weeks ago a bright, fine looking Miss of fifteen presented herself for mouth examination. When she opened her mouth, the writer was amazed to find that the whole palatal vault was missing, together with central, cuspid, bicuspid and one molar tooth on each side. The condition was at once recognized as syphilis. In so healthy appearing an individual, the presence of congenital syphilis was dismissed. In obtaining the history, this syphilitic condition was found to have been induced by vaccination about four years previous. The only answer for the presence of this condition is that unclean instruments were used at the time of vaccination. This same unfortunate result might easily occur from unclean dental instruments after operating on a syphilitic. Today you say we all sterilize our instruments. Yes, but how about the hands? Do we use rubber gloves on these suspected cases and how about those cases we operate on that do not excite our slightest suspicion? Yet if a blood test were made, some of them would show a positive reaction.

The point the writer wishes to leave with you is that more careful survey of the mouth should be made on every patient and if a suspected

lesion is discovered, follow it up until it is identified. In the more suspicious cases, refuse to do anything until a Wasserman is made. It is now a matter of routine in many of the best hospitals of this country that a blood test is made of every patient that enters. It is only by the strictest vigilance on the part of all branches of medicine that this disease may not get beyond our control. Will dentistry do her part?

#### MALIGNANT DISEASES OF THE MOUTH

When we consider the invariable outcome of a malignant tumor of the mouth when not treated, with its attendant horrors to not only the victim, but also his family, when we consider the improbability of successfully treating these cases in the advanced stages, then we can clearly conceive the advantages and importance of making an early diagnosis.

The dentist usually sees these pre-cancerous conditions long before the surgeon for the reason that the average patient does not present himself to the physician until physical discomfort compels him to seek aid. At this time the disease has progressed to such a stage that makes the condition inoperable or at least, the probability of successful treatment is greatly reduced.

The fact that the dentist has the opportunity to observe these mouth conditions in the early stages is the reason that Blair places the responsibility of early diagnosis upon our profession in his well-delineated statement expressed in the beginning of this paper.

The writer believes it to be the moral duty of every dentist, not only to examine the teeth of his patients, but to make a thorough examination of the mouth, lips, tongue, pharynx and tonsils.

Any rough surfaces on the teeth which are producing a constant irritation should be removed. In cases of small chronic ulcers or sores in the mouth, a complete history of the case should be obtained. If the history should lead to the assumption of former syphilitic affections, then it should be looked upon with grave suspicion. One of these pre-cancerous conditions with which the dentist will come in contact is leucoplakia. This is invariably caused by the formation of white patches on the mucous membrane of the tongue and may spread to the cheek. In the tobacco chewers an outline of the quid of tobacco in a white patch is sometimes observed on the buccal mucous membrane of the gums and cheek in the vestibule of the mouth. Leucoplakia is an idiopathic disease, insidious in its progress which begins with an opaque or white spot. The most common site is the dorsum of the tongue. These spots may ulcerate and coalesce into larger ones. In their incipiency these cause little or no inconvenience and if discovered at this stage usually the removal of the cause will eradicate the disease. As the growth progresses, they become painful and the tongue, lips or cheeks as the site may be, become endurated and slight hemorrhages may occur.

At this stage we invariably have carcinomatous degeneration.



The similarity between leucoplakia and secondary syphilis is often confusing. The syphilitic plaques usually appear on the border and back of the tongue and at the same time other patches may be observed on the gingiva palate or tonsils. The syphilitic spots are soft while those of leucoplakia are hard.

In the diagnosis of pre-cancerous conditions of the mouth, we must ever keep in mind that any constantly continued irritation may predispose to malignancy. We must ever keep in mind that there is no part of the body that is so subject to continual traumatism as are the mouth, lips and tongue. We must not forget the fact that a large number of patients seeking dental services past the age of forty-five years, present mouths with teeth that are broken down with sharp edges or the surface abraded through the process of mastication, leaving knife-edge surfaces that may abrade the soft tissues, giving rise to a chronic ulcer which may ultimately lead to malignant disease.

Many of these pre-cancerous conditions can only be correctly diagnosed by microscopical examination. It is clearly the duty of the dentist when a lesion is present in the mouth that cannot be diagnosed as ordinary dental diseases, to direct the patient's attention to it and, if possible, have a microscopical examination made. In obtaining a section, always obtain normal as well as pathologic tissue in the section.

#### DENTIGEROUS CYSTS

This condition is frequently mistaken for a tumor or an alveolar abscess. It is frequently seen in mouths of men and women under thirty years. It usually takes the form of a cystic growth connected with teeth or tooth follicles when eruption is retarded. In the light of our present knowledge, the explanation for the formation of these cysts is largely theoretical. Thomes has given what seems to the writer the most plausible theory. He states that when the development of the enamel of the tooth is completed, its outer surface becomes perfectly detached from the investing soft tissue and a small quantity of transparent fluid not uncommonly collects in the interval so formed. This fluid ordinarily is discharged when the tooth is erupted but when from some cause the eruption is prevented, it increases in quantity and gradually distends the surrounding tissues causing a resorption and disintegration of the adjacent osseous structures. These cysts may go on developing until a large portion of the jaw is involved.

It may be differentiated from an osteoma, in that with the cysts, fluctuation and crepitation can usually be elicited. It may be differentiated from an alveolar abscess from the fact that the cyst is very slow in its formation and is not accompanied by pain. Sometimes a history of several months in its formation will be obtained.

The absence of any of the permanent teeth with the associated lesion suggests the possibility of a cyst.

An amber colored fluid may be aspirated from the cyst by means of the ordinary hypodermic syringe in completing the diagnosis.

The X-ray will show a definite cavity with a limiting membranous lining. The method of eradication consists of widely opening the cyst, removing the unerupted tooth or tooth follicles, entirely removing the cystic lining and treating the same as any other wound in the mouth of the same extent. It has been the writer's experience that packing the cavity with iodoform gauze and irrigating with 5 per cent. salt solution every twenty-four hours will yield good results.

The most serious sequela of a dentigerous cyst is the absorption of the bone against which the cyst exerts pressure. A large portion of the maxilla or mandible may be destroyed by pressure resorption resulting therefrom.

EPULIS, A FREQUENT MOUTH TUMOR—FOUND OFTEN IN THOSE WHO  
ARE CARELESS IN CLEANLINESS OF THE TEETH

Epulis occurs most frequently in childhood and young adults. In a series of one hundred and sixty-seven cases Scudder reports forty-nine of them were in men and one hundred and eighteen in women. Thus it would seem that women are more susceptible to these mouth tumors than men.

The irritation from a carious tooth may start an epulis, or a tooth root may serve as an irritation which will encourage their development.

Calcareous deposits on the teeth may also be looked upon as a possible etiological factor. Bloodgood states that epulis stands between the really benign, slightly malignant, and the malignant connective tissue tumors.

There are two varieties of epulis. The fibrous epulis and the giant cell epulis, the giant cell epulis being the more common.

The fibrous epulis is ordinarily of small size, projecting between two teeth and spreading somewhat over the alveolar border. This type may become calcified extensively or in limited areas throughout its substance. The fibrous epulis is smooth and quite firm on the surface, not very vascular and does not bleed very easily while the giant cell epulis is soft and irregular, and contains many vessels and bleeds easily when disturbed.

This growth is slow at first, but becomes rapid as it progresses and many times will cause the teeth to spread apart with consequent loosening. As these tumors enlarge, they may remain attached to a small stalk. At first these tumors are benign, but later may lead to malignancy. The importance of early treatment of them cannot be overestimated. They should be removed as soon as identified and subjected to a careful microscopical examination. The portion of the periosteum or alveolar process to which they are attached should also be removed. This may necessitate the removal of one or several teeth in order to re-



move the tumor in its entirety and unless it is completely eradicated, the effort to obtain a cure will be fruitless.

There is a greater tendency to do an insufficient amount of cutting than there is to perform an operation that is too radical. After the complete removal of the tumor and its source, the actual cautery should be used to sere over the wound.

Another very important and not infrequent pathological condition of the mouth which is of vital interest to the dentist is Vincent's angina. The lesions are associated with a mixed invasion of fusiform bacilli and spirochetes vincenti. The fusiform bacillus was first described by Miller, in 1883, who found that the infection occurred in clean as well as in unclean mouths.

During the decade following 1896 Vincent, a physician in Paris, wrote extensively on both the organism and the clinical findings. He gave the disease the name of Vincent's Angina. It is defined as an infectious disease of the mucous membrane of the mouth, throat and bronchi. This disease or one simulating it, is prevalent among the armies of Europe, and is referred to as "trench mouth" or "trench gums." The disease probably has no connection with trench life excepting the conditions made possible by the collecting together of large numbers of young men. The one condition which favors the development of the disease is oral sepsis. Vincent's Angina is a very infectious disease and when it makes its appearance in the army it soon becomes an epidemic. The disease is characterized by a deep tissue necrosis, covered by a whitish-gray membrane. This membrane is easily removed and when rubbed off leaves a granular raw bleeding base. This leads to crater-like ulcers with irregular edges.

Barker and Miller, *Jr., A. M. A.*, Sept., 1918, classifies the symptoms as follows:

Objective signs:

1. Insignificant as a rule of constitutional disturbances. The patient is not very ill.
2. Absence of fever, the temperature rarely rising over from 100 to 101.
3. Heavy and offensive breath.
4. Enlargement of the cervical and submaxillary glands, as a rule, moderately. They are tender and never suppurate.
5. The lesion itself.
6. Swollen, spongy and bleeding gums suggestive of scurvy.

Subjective symptoms:

1. The patient complains of extremely bad taste in the mouth.
2. Tenderness of the gums, so that the use of a tooth brush is impossible and mastication is so painful as to preclude eating.
3. Pain in swallowing.

4. Looseness of the teeth, with salivation which is common, resembling mercurial ptyalism.

5. Anorexia, or loss of appetite.

6. Joints painful.

7. Lassitude—"lack of go."

8. The most serious constitutional symptoms and one always present when the teeth and gums are affected, is severe depression.

The prognosis is usually favorable. Most cases run a benign course. If seen early the case can be controlled easily. Internal medication has little or no value.

The care of the mouth is the first essential step in prosecuting the treatment. A solution of one-half of one per cent. potassium permanganate used as a mouth wash every three hours will yield good results. The application of 7 per cent. tincture iodine to the pockets around the teeth and touching the ulcers with silver nitrate (concentrated solution) is recommended.

Emrys-Roberts, *British Medical Journal*, 1917, recommends the following lotion. Hydrogen peroxide, 5 fluid ounces; wine of opium, 3 drams; glycerine, 5 drams; and water sufficient to make 8 ounces.

Local applications of arsphenamin in concentrated solutions or dusted over the surfaces are regarded as one of the best therapeutic measures obtainable. The mouth and teeth should be made as clean as conditions will permit before resorting to local treatment.

#### DISEASE OF THE ANTRUM OF HIGHMORE

What is the dentist's responsibility relative to the treatment of these cases? The writer believes that greater good and more satisfactory results can be obtained by co-operation of the rhinologist and the dentist in these cases. It is a matter of making a correct diagnosis. When the disease is of purely dental origin, then the responsibility should fall upon the dentist to handle the case. If the accessory sinuses are the etiological factors in producing the disturbance, then the responsibility must rest upon the rhinologist.

There are just three principles that we must keep in mind in the treatment of empyema of the antrum.

*First*, remove the source of irritation.

*Second*, drainage must be established.

*Third*, ventilation must be maintained.

In other words, treat it as any other abscess in the body is treated with the addition of maintaining ventilation.

The writer wishes again to emphasize the importance of making a correct diagnosis. This is more important than the character of the operation. It is not of so much importance as to whether drainage is established through the nasal or oral cavities as it is that the source of irritation be removed. Too often dentists open into the antrum in the attempt to effect a cure when the source of irritation is in the frontal or



sphenoidal sinuses or ethmoidal cells. In these cases only two of the three principles are carried out, viz., drainage has been established and perhaps ventilation maintained, but the antrum still discharges because the source of the trouble is still present. It is such cases that have led to the criticism of the Caldwell-Luc operation, or opening the antrum through the canine fossa. A criticism that is frequently made is that the opening will not close. Of course it will not close if pus is continually discharging through it. If the source of irritation is removed, it has been the writer's experience, and in this he is sustained by many others, that it is difficult to keep the antrum open long enough to treat it. This whole proposition can be reversed if the source of irritation is of dental origin, then opening through the nasal fossa will not avail a cure. It merely establishes a drainage. Hence again, the method of operating is of secondary importance.

In cases of empyema of the antrum, when the source of irritation is of dental origin, the writer prefers opening into the antrum through the canine fossa, making the opening large enough to explore the antrum with the fore finger, thus septi may be discovered and cut away if necessary. The antrum is then irrigated with a 5 per cent. salt solution and packed with iodoform gauze for twenty-four hours. The gauze is then removed and not replaced, but a gutta-percha button is fitted to the opening to keep out food debris, etc. The antrum is then irrigated every twenty-four hours for three or four days, then the irrigations are made less frequent. The gutta-percha button is cut down each time of treatment until it is reduced to 5 mm. in diameter, when it is left out entirely and complete repair takes place.

We shall now consider briefly a phase of one of the most common pathological conditions found in the mouth, viz., those morbid conditions involving the pericemental membrane. The writings on the subject of mouth infection have been voluminous during the past five years, and in this discussion we shall confine our thoughts to the eradication of those infections found at the ends of the roots of the teeth.

\*Dental and medical science have made it clear that pathologic conditions of the pericemental membrane and diseased ends of the roots of the teeth are a contributing factor to, and frequently the primary cause of, general systemic disturbances. The physician and the laity are looking to the dentist to eradicate these conditions. This can be done in one of two ways:

*First*, extraction of the tooth followed by curettage.

*Second*, surgical interference at the focus of infection, mechanically removing the morbid condition leaving the healthy tissues to go on functioning.

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\*Lyons; Indications and contra-indications for root resection.

It is a well-known fact that with our present methods of root-canal therapy, few of these morbid conditions can be so corrected that we can conscientiously assume that the area is free from infection, and will remain so.

By what steps then are we to decide whether extraction of the tooth is indicated or whether the greatest service to the patient can be rendered by root resection? No hard and fast lines can be drawn as to just when root resection is indicated and when extraction of the tooth should be the operation of choice. Here again we come to the great question mentioned in the first part of this paper, viz., diagnosis. A correct diagnosis of each case is not a simple matter.

The first question to determine is—are general conditions favorable to normal repair of bone? To determine the answer to this question, there are several vital factors that must be taken into consideration. *First*, the present state of health of the patient; *second*, the past illness, and the possible recuperative or reserve force of the patient. The lowering of the vitality through chronic alcoholism or such diseases as tuberculosis, syphilis and diabetes which lead to a state of constitutional dyscrasia will have a profound influence in preventing repair, and redevelopment of normal tissue.

Age is another factor which should be considered. In the aged, the process of repair is slow and the prognosis for bone regeneration is not so good as that in the young or in middle life. In the aged the operation of root resection is not undertaken without considerable hazard. The normal or abnormal circulation of the blood is still another factor that plays a very important role in making up a judicial diagnosis. It is an established surgical fact that without a certain definite blood supply to a part, repair of tissue will not take place. Notwithstanding the fact that the teeth and surrounding structures have a very rich blood supply, in certain types of individuals and under certain pathologic disturbances there is not sufficient blood supply to the apical area to insure repair of the parts after the operation of root resection.

The clever diagnostician will discover this condition before making his final decision as to the character of his operation.

#### THE X-RAY IN DETERMINING THE OPERATION INDICATED

The proper valuation of X-ray findings is very important to correct diagnosis. If the case is of an alveolar abscess of long standing, or a case of imperfectly-filled root canal with granuloma showing in the apical area where all of the evidence points to disease or death of the pericemental membrane in the apical areas, it is the opinion of the writer that surgical procedure rather than dental therapy is indicated.

The character of the surgical procedure may be root resection in favorable cases and extraction of the tooth in the unfavorable ones. Here again another question arises—what are the points of differentiation of the favorable and the unfavorable cases?



It is a lamentable fact that many men are resorting to root resection as a short-cut method for curing an alveolar abscess over a beautiful crown or bridge attachment without first removing the same and sterilizing and filling the root canals. If the canals and dental tubules are not previously sterilized and the canals thoroughly filled, a re-infection will occur from the tubules exposed when the resection is made.

It is not permissible to leave a crown on an imperfect foundation because it is a masterpiece of art. If it is not worth while to remove it and sterilize the canal and tubuli, then it should be extracted.

Too often root resection is resorted to for the purpose of saving a nice piece of bridge work and the patient's health is jeopardized. We are not doing good surgery when, as a matter of routine, we do not insist that the canals be sterilized and filled just previous to the operation.

The question of sterilizing and completely filling canals in multi-rooted teeth for the eradication of an infection, is a very doubtful procedure and in the writer's opinion the patient's welfare will be better taken care of by extraction followed by curettage of the bone. In no cases should this operation be resorted to when the bone and pericemental membrane are diseased beyond the apical third of the root.

The technic for the operation of root resection will vary with the individual operator. Equally good results will be obtained by methods that are quite different. The greatest factor in the success of the operation is a correct diagnosis of the case. The welfare of the patient should be the first consideration; a hasty diagnosis will often lead to failure, and the patient will consequently have to suffer from the operator's misconception of conditions.

*A healthful hunger for a great idea is  
the beauty and blessedness of life.*

—JEAN INGELOW

## DEEP CUSP GRINDING FOR FULL DENTURES\*

BY ROBERT R. GILLIS, HAMMOND, IND.

**T**HE PATIENT whose masticating power is limited by the use of full dentures is seriously handicapped.

Whereas normal, natural dentures may be exercised under 75 to 150 pounds pressure, artificial dentures are seldom capable of more than 50 pounds pressure—and the average is much less, for many are not capable of more than 12 to 15 pounds.

We readily recognize that a sharp cutting edge does its work efficiently while a dull edge requires much force to cut at all. A sharp pair of shears requires the minimum of force applied for cutting readily; and in proportion as the edges are dull, more and more force must be applied to accomplish the same work.

So with dentures having round or blunted cutting edges, little efficiency in masticating can be realized. Sharp deep cusps overcome the handicap and enable the patient to masticate food thoroughly, even with the limited pressure that can be used.

The argument is sometimes raised that persons in advanced years present rather worn and flattened cusps in their natural teeth; therefore we should reproduce flat cusps in their artificial dentures.

This is proven false reasoning by the experience of patients whose old, flat-cusped dentures are replaced by modern dentures with deep, sharp cusps in the bicuspid and molars. The increased efficiency in masticating power is a great joy and comfort to the patient and most satisfying to the dentist who aims to give the maximum of service.

So far as cusp-form is concerned, "the teeth of youth," may be exaggerated, no matter how old the patient.

Deep cusps also allow considerable greater over-bite for the front teeth. This is a desirable point for it increases the incisive power of the dentures.

The dentist today who is making dentures by the methods taught fifteen or twenty years ago is not doing all he can do for his denture patients. Such patients deserve the very best that any dentist can give, for it is a serious health menace for anybody to lose his masticating power.

New tooth forms will soon be on the market that will be a great improvement over anything that is offered today. Until these new forms are procurable, our object can be accomplished by regrinding the Trubyte teeth, sharpening the cusps and deepening the sulci.

This is done with small stones.

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\*Given as a clinic at the Indiana State Dental Society, June, 1919.



## COLLECTIONS\*

BY M. D. KOTTRABA, D.D.S., BUTLER, PA.

IT HAS BEEN ESTIMATED that more than one-third of the dentists of the United States are unable to meet their financial obligations. And it is believed a large per cent. of these are at an early age forced into retirement; many becoming dependents.

We might ask why so many delinquents and so many dependents?

On first thought, we would say: there must be something very decidedly wrong; then would it not be a good time to attempt, if possible, to correct some of these wrongs and abuses that we know exist, and lower this per cent. of delinquents if possible? Our country has been in a topsy-turvy condition for some time on account of the war, as you know, and we are now in a new era. Reconstruction, rebuilding and other changes are going on in the business world. Why do not the individual members of the dental profession awaken to the sign of the times and do some reconstruction and make some corrections they know are much needed to insure future happiness for their family and themselves? And why not start right in on *Collecting*?

In this age when we believe more and more in preventive dentistry. I wonder if we could apply some preventive measure and not have any bills to collect? All cash, most of it paid before we start the work. Fine! When will we start? Just when you *say*.

Preventive measures are all very good, but it seems we all have more or less collecting to do. And no doubt have had varied experience along this line.

A statement recently sent out by myself was returned with this notation: "Am sorry I owe this bill. Go to Hell—Goodbye."

I probably deserved that answer, for I allowed the account to get cold. Keep them warm, boys, for this shows that our patients have little regard for our future welfare.

The most difficult thing we have to do is collect an old account. Don't let it get old. Let's do our collecting in a business way. I would say first get an exact promise, from those to whom you wish to extend credit, as to when they will pay. Keep a record of that promise, and if not paid on that date, send statement or telephone. If convenient, I prefer telephone, and don't let them think for a minute you have forgotten it.

I have tried collecting agencies, and the follow-up letter, but have not found anything as good as the telephone. Try it.

If we do not collect our bills we will loose our patients, for they will go where they have to pay. And at that rate we would soon be classed

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\*Read before the Lake Erie Dental Society, May, 1919.

with the delinquents and dependents and would be worse off than the poor hair-lip cripple, who was called upon in one of Billy Sunday's after-meetings, to testify what the Lord had done for him. He arose and said, "He damn near ruined me."

Now do not let us be cripples when it comes to collections. And do not be cowards, afraid of offending and losing your patients.

Be brave and go over the top and get that which rightfully belongs to you, the possession of which might afford you and your family many pleasures, as we go along through life together.

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## VAPOR ANESTHESIA FOR ORAL AND FACIAL SURGERY\*

BY WM. HAMILTON LONG, M.D., LOUISVILLE, KY.

**S**O GREAT AN AUTHORITY as Gwathmey recently remarked that the vapor mask, or semi-open method of anesthesia, should be used in operations on the head, neck and upper thorax; that the closed method should be employed in abdominal and other operations requiring relaxation. The method and technic described later may be considered an open method, as there is no other than incidental rebreathing.

The accomplishment of a smooth, satisfactory and uninterrupted anesthesia, for prolonged surgical work within the mouth or about the face, is by no means an easy or a simple matter. It is for this reason that doubtless both surgeons and anesthetists have contented themselves with the unsatisfactory technic of an interrupted administration with its delays and its dangers. The latter are at least two-fold, for we know that an anesthesia going from deep to shallow—an anesthesia in which the procedure is a very profound induction, then withdrawal until the reflexes return, or even until voluntary muscular action is noted; (this to be repeated many times)—is more dangerous than a smooth and continuous maintenance of anesthesia at a given depth. And, also, as a proper aseptic technic cannot be adhered to under an interrupted or intermittently administered anesthesia, the danger of infection is that much increased. Furthermore, if there were no other reason for improvement over the method mentioned, the fact that it is unscientific and a makeshift should be sufficient.

Intratracheal anesthesia, with the complicated apparatus necessary for its employment and the dangers incident to and arising solely from the method, I am free to say, never has impressed me favorably; and in trying to improve my technic for that class of cases in which free access to the inspiratory inlets was denied by virtue of the character of the operation, I searched for apparatus which would be at once simple, com-

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\*Read during the Fourth Annual Meeting of the Interstate Association of Anesthetists, in conjunction with the Indiana State Medical Association, Claypool Hotel, Indianapolis, Ind., September 25-27, 1918.



pact and satisfactory. I believed that a better understanding of anesthesia by intrapharyngeal insufflation would enable me successfully to anesthetize any patient for operations in which the intratracheal method was especially advocated.

There is, of course, nothing new in any of the simple paraphernalia which is herewith described, and nothing with which the members of this society are not familiar; but inasmuch as the mere fact that smooth, deep anesthesia could be maintained for an indefinite period while surgical work was in progress within the mouth, or about the face or neck, has seemed a revelation to some surgeons for whom I have used the intrapharyngeal method, I thought a brief description of the method might be of interest, and convince some that simplicity and lack of elaborate and complicated equipment are not incompatible with efficiency.

The term vapor anesthesia is inaccurate as any inhalation anesthesia is "vapor anesthesia"; but as the term is used we mean that the agent is vaporized in a closed container at a distance from, and the vapor then conducted to the patient; and by intrapharyngeal vapor anesthesia we simply mean of course, that the vapor is discharged within the mouth or pharynx whence it is taken into the lungs by normal respiration.

The Hitz bottle, which is merely an improved Junker, and the foot bellows are all the apparatus needed, save, of course various vapor conductors; mouth gag, nasal tubes, pharyngeal tubes, or cheek hooks. There are much more elaborate outfits to be had; there are two and three-bottle vaporizers to be seen with and without heating apparatus attached; and there is an electric motor blower. But I believe the foot-bellows and Hitz bottle are as efficient as any, besides being cheaper and much more portable. One soon learns to control the volume of air with the bellows and the Hitz bottle is so made that all or any portion of the pumped air may be forced through the anesthetic agent. This is its advantage over the original Junker. The bellows may be worked at the same speed and the same volume of air be pumped, while the controller on top of the bottle may be adjusted so that much or little anesthetic vapor is conducted to the patient.

At the "air" or inlet tube of the Hitz bottle I have had a Y made with a stopcock on one arm. A cylinder of oxygen is attached to this for emergency use, or to augment the atmospheric air current from time to time, if cyanosis or other indications for increased oxygenation be observed. Cyanosis is not an uncommon combination as the operative procedures are frequently of a character to mechanically shut off the air way by accumulation of blood, pressure sponging or instrumentation. Such mechanical interference with breathing should not be permitted to become embarrassing.

The Junker type of apparatus is open to the theoretical objection that a "constant vapor" is not maintained. A "drop" or "surface"

evaporation type meets this objection, but for the use of the mixture later advocated, I believe the Hitz apparatus the best style.

The constant agitation of the mixture by the air passing through assures the delivery of a vapor in which the proportions are practically the same as of the liquid mixture. There is no fractional evaporation, which may result in a vapor far stronger in chloroform than was intended, or than the fluid mixture represents.

In pharyngeal insufflation, says Coburn, after the patient is deeply anesthetized, the short catheter is passed through the nares into the pharynx and the insufflation begun. The amount of air insufflated need not always be so much as that required in the intratracheal method, but the amount of ether vapor must be the same. The obstruction at the base of the tongue is automatically removed in the pharyngeal method also, but not quite so perfectly as in the intratracheal method. While tracheal insufflation has heretofore been extensively used in chest surgery, yet pharyngeal insufflation possesses special advantages for this very work. After the chest cavity is opened, the distention of the lung is under more pliable control with pharyngeal insufflation, as such distention is continuous in the tracheal method and the distended lung is always in the field of operation on account of this distention and thereby interferes with the work of the surgeon, whereas in the pharyngeal method, the lung of the side under operation collapses, thereby facilitating the work of the surgeon. When the operation is completed and the surgeon is ready to tie the last sutures, the collapsed lung is easily and quickly expanded by placing a wet towel over the patient's face. This retards the outflow of air and insufflated air is of such volume that it quickly distends the lung.

For the best results I wish to advocate the use of a chloroform-ether mixture for vapor anesthesia. Induction may be by any method, the nitrous oxid-oxygen-ether sequence being my preference; or in young children the essence of orange-ether sequence; but for maintenance a mixture of chloroform and ether is used. The proportions in most cases are roughly, chloroform one part and ether two parts, but these are varied according to the type of patient, and the chloroform is increased in the mixture in proportion as difficulty in maintenance is anticipated. Chloroform is a more powerful narcotizing agent than is ether, and as we cannot in these cases cover the entire mouth and nose for air exclusion, we find chloroform is the better acting anesthetic for the method. However, reinforcement with ether is essential for its stimulating effect, so that the profound depression of chloroform alone may be counteracted, as a measure of safety.

Clinically and practically a mixture of chloroform and ether, in which chloroform forms from one-third to one-half of the mixture, gives a narcosis which acts like chloroform anesthesia and looks like an ether anesthesia; i. e. profuse mucous secretion is not observed, anesthesia of



proper depth is more easily maintained; but the color of the patient remains rosy, circulatory depression is not evident, and blood pressure does not become reduced.

This action of chloroform-ether mixture may seem paradoxical to many, and those whose prejudice against chloroform extends to an almost complete elimination of it from their armamentarium argue that I do not and cannot get the advantages of both agents while counteracting the disadvantages of each with the other, and that I am merely subjecting the patient to the dangers of both. I can only reply that observation and experience, which count for more with me than theoretical reasons, merely strengthen my views on the efficiency and safety of chloroform-ether mixture as used for intrapharyngeal vapor insufflation.

For those cleft palate and harelip cases which are operated on very young—under two years of age—chloroform alone is used by this method. The immediate risk is great if we maintain a narcosis throughout of sufficient depth to keep the throat reflexes abolished, yet we should be satisfied with no less perfect an anesthesia. With chloroform, the line between deep anesthesia and fatality is always narrow. An anesthesia which precludes coughing and strangling when the throat contains blood, and the head is kept in a straight position, with the face looking directly upward—thus permitting all saliva, blood and mucus to trickle by gravity to the larynx—is necessarily profound. And in children at the age mentioned at almost any time during such a maintenance an extremely slight increase of chloroform vapor, added when the narcosis is already deep, may swing our anesthesia across the safety-line to a sudden fatality. Thus eternal vigilance is the key to satisfactory anesthesia in these cases.

In my hands this simple method, with its equally simple and readily portable outfit, has displaced all other methods and apparatus for anesthesia in the surgical work to which it is adapted. Hare-lip, cleft palate, excision of the lower jaw, labial epithelioma and similar operative cases are all anesthetized in this way. The pharyngeal tubes and funnel-inhaler method have long since been discarded, personally, as never having been entirely satisfactory in my own hands. The intratracheal method I never have routinely adopted, believing that its physical and mechanical dangers are great, and that the pharyngeal method enables me to secure more satisfactory results for the surgeon, patient and anesthetist.

Weissinger-Gaulbert Building.

## REPLACING TOOTH ON PLATE IN FIFTEEN MINUTES\*

BY W. S. WALTERS, WEST LAFAYETTE, IND.

Carefully select tooth to replace one broken off the plate. With No. 6 or No. 8 bur, drill a hole straight through the plate to the palatal surface, beginning about the point where the pins of the tooth will come. Then with plate-bur about size of match head, counter-sink this straight hole on the inner palatal side. Take a piece of moldine about size of hazel nut and press into the gum channel just over this straight hole. With hatchet excavator, punch hole through moldine on line with and into this straight hole, and rotate the excavator so as to make a funnel-shaped hole or gate in the moldine.

Now place the tooth in place and hold there by covering it with another piece of moldine, which also will keep the metal from escaping around the sides of the tooth. Put a small piece of Melott's metal into a ladle or old spoon, and heat just to the flowing point (not too hot), and pour into the hole made in the moldine. Let cool, remove moldine and with hot instrument cut metal off flush with surface of plate and polish.

This is not original but do not know to whom to give credit, as I picked it up somewhere years ago, and it has been a life-saver. *Try it.*

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\*Clinic at Indiana State Dental Society, June, 1919.

VINCENT'S DISEASE  
A METHOD OF DIAGNOSIS AND TREATMENT\*

BY GLENN J. PELL, D.D.S., INDIANAPOLIS, IND.

VINCENT'S DISEASE, also called Ulcerative Gingivitis and Trench Mouth, is described in most of the books on oral surgery and has been before us frequently in dental literature. It is characterized by the formation of ulcers on the gingivæ, buccal mucosa and soft palate. It may effect a few teeth or all of them. The ulcerated gingivæ do not slough very much superficially until after deep penetration; then break down, resulting in considerable loss of tissue, which is not fully replaced. There is a characteristic, fetid odor. The ulcers are covered by a grayish-white pseudomembrane which when removed leaves a raw, bleeding surface. It often causes considerable pain but rarely any constitutional disturbance. On the infected gingivæ, extending rootward from the free margin there is a dark red zone from one

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\*Presented at the Indiana State Dental Society, June, 1919.



to four mms. in width. The condition is aggravated by the presence of tartar, ill-fitting crowns, overhanging fillings, broken-down roots, cavities and inflammatory conditions over and around partially-erupted third molars.

#### DIAGNOSIS

Correct diagnosis of this disease is very necessary because of similarity of lesions to syphilitic ulcer.

From suspected cases, make smears from the deeper parts of the ulcerated gingivæ. Stain and examine microscopically, using the oil immersion lens. If you find Vincent's Bacillus and the spirillum that always accompanies it the diagnosis is positive. If the organisms are not present the diagnosis is negative. Always on a negative finding if the clinical manifestations closely resemble the disease, make more smears and examine to allow for a possible error in technic.

#### TECHNIC FOR MAKING SMEARS

Have a clean slide, remove debris and sloughed tissue from over the gingivæ selected. Take a platinum loop mounted on a glass rod, sterilize in flame, insert loop to the bottom of the ulcerated surface and spread the deposit, thus obtained, very thin on the slide. Would suggest that you make three smears, one near either end and one in the middle of the slide, taken from three different locations. If smears are too thick, thin by adding distilled water. Stain with methylene blue or, preferably, methyl violet. Wash with water. Dry. The specimen is now ready to be examined.

#### TREATMENT

Medicinal methylene blue and methyl violet are the agents used. We have found methyl violet the more potent remedy of the two. In the amount used, both are harmless, do not cause pain when applied, do not cauterize or destroy tissue but will give relief from pain usually within an hour after application, will discolor gum tissue temporarily and will penetrate and discolor silicate fillings. This fact should be carefully recognized.

#### TREATMENT OF PATIENT

Spray mouth thoroughly with an antiseptic solution, mechanically remove food debris and sloughed tissue from the gingivæ. Further cleanse with small pledget of cotton, saturated with  $H_2O_2$ , followed by antiseptic spray, dry gums and apply either methylene blue or methyl violet (see prescription for same) with a small pledget of cotton (about the size of a pin head), working it down to the bottom of the ulcerated surfaces. *The success of this remedy depends greatly upon getting the medicament in contact with the organism. Repeat this in detail daily as long as necessary, then gradually extend the time between sittings to two, three, four days or a week as the clinical manifestations guide you.*

Thoroughly remove all deposits of calculus, overhanging fillings or improperly-fitted crowns as early as possible during the treatment to eliminate the irritation produced by them. Prescribe the following mouth wash:

R<sub>x</sub>

Potassii Permanganas . . . . . grs xiv  
Aqua Pura, q. s., . . . . . fl ozs vi-M.  
Sig.—Use tablespoonful to one-fourth glass of water as a mouth wash every two hours.

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R<sub>x</sub>

Medicinal Methylene Blue . . . . . grs vii  
Grain Alcohol . . . . . fl ozs i-M.  
Sig.—Pour a few drops in medicine dish. Apply as described above.

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R<sub>x</sub>

Medicinal Methylene Blue, . . . . . gr xiii  
Aqua Dist. . . . . fl ozs i-M.  
Sig.—Use same as above.

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R<sub>x</sub>

Methyl Violet . . . . . gr vii  
Grain Alcohol . . . . . fl ozs i-M.  
Sig.—Use same as above.

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R<sub>x</sub>

Methyl Violet . . . . . gr xi  
Aqua Dist. . . . . fl ozs i-M.  
Sig.—Use same as above.

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Prognosis is very favorable under proper and consistent treatment.

Several agents have been employed in the treatment of this disease with various degrees of success, some of which are salvarsan, trichlor-acetic acid, phenol sulphonic acid, silver nitrate and 10 per cent. solution of formalin.



THE MAKING OF GOLD INLAYS BY  
THE INDIRECT METHOD\*

BY R. L. MORRISON, D.D.S., WASHINGTON, D. C.

THE INDIRECT METHOD of making inlays is today practiced by the leading men of the dental profession and with this fact in mind it does not seem necessary for me to attempt to convince you that if you are desirous of practicing the best dentistry possible, it behooves you to adopt this method, in cases in which it is necessary or practicable. This method probably takes a little more time for both the operator and the patient; therefore it is necessary that the patient appreciate the work and be willing to pay for it, or the operator is not justified in following this method.

In my opinion it is not necessary or practicable in class one or five cavities, or is it of so much value in class three or four cavities. Its real value is appreciated in the compound cavities in the posterior teeth.

I am going to give you my method first and then the methods used by the men who have helped me in this work. All of them accomplish the same result, their choice being a matter of preference.

I am going to consider a vital bicuspid tooth requiring an MOD inlay with approximating and opposing teeth. This I think is a case of average difficulty. After the cavity has been prepared according to the method advocated by Dr. Black, I take an impression with Kerr's modeling compound. The tooth should be lubricated with saliva, oil of cajeput, or oil of olives, so that the impression will not adhere to the tooth. A matrix made of 36-gauge copper is loosely fitted over the crown and festooned so that it will not impinge the gingival tissue. Aluminum ferrules also may be used for the same purpose. The matrix is filled with modeling compound which is softened by dry heat to a temperature that is not great enough to injure the tissues. This is then pressed into place, chilled with cold water, and removed immediately. In some cases of MO or DO cavities where it requires pains to adapt the matrix, that is where the matrix will not pass the contact point distal to the cavity, adjust the matrix by cutting away a portion of the matrix so that it will extend down to the contact point, catching over the cusps of the tooth, using in this case the copper band and forcing the soft modeling compound down into the matrix which is in place. The impression is then chilled and removed.

A piece of inlay wax is softened in warm water, and a wax impression is taken, getting the contact points and the bite. The excess wax is cut away and the impression taken out with very little carving being

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\*Read before the George Washington Student Dental Society, 1919.

done in the mouth. The cavity is closed and the patient dismissed. Some men do not take a wax impression at this time, but use a different method which I will take up in its place.

A piece of thin casting wax or ordinary base-plate wax is wrapped around the cervical portion of the impression so as to make an extension, sealing it around to keep the plaster out. This is invested in plaster with the cervical portion up. The investment should be of a suitable size to prevent distortion of the waxed impression. After allowing twenty minutes or longer for the plaster to set it is removed from the glass slab upon which it was poured. A mix of amalgam is made, the consistency of which should be similar to that used in making fillings. This is divided into two equal portions. To one portion more mercury is added until the mixture is of such a consistency that it will distort somewhat when dropped several inches upon a hard surface. A small amount of this soft amalgam is placed into the impression. Then the plaster matrix is severely jolted upon a glass slab several times. More of the mix is added and the process repeated until the impression is half full. The second portion is packed into the upper part of the impression and when full considerable pressure is exerted to squeeze out the excess mercury.

Another method of making the die is to put a small amount of the soft amalgam into the impression and pressing it into the fine lines with a little cotton on a pair of pliers. This is repeated several times until the impression is about half full. The advantage of the first method is that it is quicker and there is less liability of distorting the fine lines of the impression. The procedure from this point is the same as that given above. The excess mercury may be squeezed out by using cotton on pliers, the handle of an ordinary cutting instrument, a pestle, or by any other means desired. The separating of the amalgam into portions of different consistency is important because it is necessary to have the amalgam in the bottom of the impression rather soft so that it will copy the fine lines. The stiffer mix is added to the upper portion of the impression to take up as much of the excess mercury as possible.

The amalgam die is allowed to set at least ten hours, preferably over night; then separate the die from the investment. The die is then oiled with oil of cajeput or olive oil, and it and the wax impression taken previously are put in tepid water for several minutes, after which the wax impression is put on the die. The wax impression is then carved with whatever instrument desired, being careful not to touch the contact point or points. I find that the small blade of a pen-knife or an Ivan's carver very good for this purpose. I like to cut away the wax along the margins, especially the gingival, to be sure that no air spaces are present, because it is only along the margins that decay can reoccur. The fine edges can be added along the margins by placing a small shaving of wax where needed and touching it with a piece of 24-gauge wire in the shape



of a loop heated to almost redness. With this wire so shaped and heated you can add the smallest particle of wax at any point desired without melting the wax in the immediate vicinity.

Now we will go back to the method pursued by those who do not take a wax impression at the time the modeling compound impression is taken. They carve a wax impression on the amalgam die and when the patient comes the wax impression is tried in the tooth and the carving completed at the chair by changing the wax impression from the die to the tooth and vice versa. From now on the method of procedure is the same whether the carving of the wax impression is done at the chair or not.

The method of investing is the same as for inlays made directly, but so many methods are used and in many cases such poor results are obtained because of faulty investing that I feel justified in giving you my method for investing. A sprue varying with the size of the impression is heated and imbedded in one of the marginal ridges at an angle of forty-five degrees to the occlusal surface. The impression is then removed from the die and put in a sprue-former, leaving about one-eighth of an inch between the impression and the sprue-former. Then a very thin mix of Weinstein's inlay investment compound is made in the palm of the hand and painted over the entire surface of the impression with a fine, stiff artist's brush. A thin mix of Standard inlay investment compound is made, poured into the inlay ring, and the sprue-former with the impression attached is inverted and placed into the ring, care being exercised that the impression does not touch the sides of the ring. About thirty minutes is allowed for this to set, then the sprue-former and sprue are removed. The wax may be boiled out by either of the following methods: The ring may be placed in a vulcanizer and heated for three-quarters of an hour at 180 degrees; or the ring may be placed on the top of a vulcanite flask and heated over a Buffalo stove; the ring should be protected from draughts.

The casting may be done by any method desirable. The casting is pickled and placed on the die. Perfect adaptation may be obtained by swaging. The inlay is removed at this point to destroy cohesion, then placed on the die and polished, giving us a finished product ready to be inserted in the tooth.

1335 H. St, N. W.

## THE INDICATION FOR AMALGAM FILLINGS AND THE INFLUENCE OF HEAT ON THEM\*

BY F. B. DAVIS, D.D.S., ERIE, PA.

**T**ECHNICALLY an amalgam filling should be placed only in such locations where it is impossible to prepare a cavity for an inlay or a filling of better material. Amalgam fillings are indicated in some gingival cavities, especially the lingual surface where the cavity extends beyond the margin of the gum. They may be indicated in some small cavities on any of the exposed surfaces of the molars and bicuspid where the cavities are too small to make an inlay, and where the rubber dam cannot be placed to mallet a gold filling.

An amalgam filling is indicated in bicuspid and molars in cases where the gum has receded beyond the enamel, and the cavity extends around the tooth.

There are some broken-down teeth that can be built up for crown work with amalgam. Some teeth may be built up for orthodontic purposes and for restoring V spaces.

## FINANCIAL INDICATIONS

Some people do not have the earning capacity to buy better dentistry; therefore an amalgam filling is indicated. Some people are so ignorant, so small, so stingy, so mean to themselves, that they will not buy anything but the cheapest.

## SALESMANSHIP

The ability of the dentist to persuade the patient to buy better dentistry and his ability to do better work, also his inclination to render more service, are valuable adjuncts. If this persuasion fails, use amalgam.

A good amalgam is better than a poor gold filling or a poor inlay.

The physical condition of the patient may not permit cavity preparation for an inlay or stand the malleting of a gold filling, and in such cases an amalgam or cement is indicated.

## THE INFLUENCE OF HEAT ON AMALGAM

The crystallization of an amalgam is interfered with at very low temperatures and that below body heat, 98 degrees F. Amalgam which stands the stress at 70 degrees F. breaks at 94 degrees F. When amalgam which has an excess of mercury in it, is heated to 154 degrees F., the mercury will come out of the amalgam and the edge strength is nearly destroyed.

When amalgam is heated to 140 degrees F., I believe that 50 per cent. of the edge strength is lost. Some people can heat the teeth hotter than 140 degrees F., because we heat inlay wax 135 degrees F., and it does not hurt very much in most cavities of vital teeth.

We heat impression compound to 150 to 160 degrees F., and some mouths will stand heat above 160 degrees F. The thermal changes in

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\*Read before the Lake Erie Dental Society, May, 1919.



amalgam cause the mercury to expand and contract just the same as in the thermometer. The other metals do not expand and contract at the same rate.

The heat that the mouth will stand does not expand the amalgam very much. The mercury softens and moves between the silver particles and does not change their position but little. The mercury does the most of the expanding and contracting.

For every degree above the starting point (which I think is minus 39 degrees F.) to the point that the mercury comes out of the amalgam, the amalgam's resistance to pressure is diminished at a definite rate per degree of heat.

The mercury softens between the alloy particles at a definite rate, at the same time the mercury expands more than the other metals; therefore it must move between the alloy particles. I have tested an alloy by heating it until the mercury made its appearance, but could not detect any expansion.

Alloy manufacturers should try to make an alloy that is not influenced by such low temperatures. It may be that some low-fusing metal can be found to take the place of mercury, or mercury alloyed with a higher fusing metal so that we could reduce the amount of mercury.

There is much to be learned about amalgams, and a large field to investigate. I hope that someone will be able to produce a plastic metal material which will have the desired requirements. Having a knowledge of some of the thermal physical properties of amalgam, having seen the edges broken off contour fillings and having seen how rough amalgam fillings become after they have been used, we can understand why they do not stand the stress of mastication under all conditions.

Amalgam is an inferior material compared with the ideal requirements, but we will have to use it until something better can be discovered or amalgam improved.

We have seen statements of edge strength of amalgams. I believe that the tests were made at room temperature. The tests would vary as the temperature of the room varies. Such tests do not represent mouth conditions and are not correct. Amalgams should be tested at mouth temperature, at or above 98 degrees F.

It would be better to test the amalgam at 140 degrees F., which would be about the weakest that the amalgam would be in the mouth.

Just think of amalgam being softened three or four times a day, and it takes a day for amalgam to crystallize to its maximum hardness. You can form your own conclusions about the results.

I believe that the maximum hardness of an amalgam is at a low temperature of 40 to 80 degrees F., below zero.

There are several standard requirements for an amalgam of which I will name three:

*First*, slight expansion on crystallization.

*Second*, edge strength maintained at the highest temperature that hot food can heat the fillings in the teeth.

*Third*, when edge strength is tested, it must be tested above 98 degrees F., and I think it should be tested at 140 degrees F., so that we may know the percentage of edge strength lost for each degree of temperature above 98 degrees F. The test should read edge strength so many pounds at a certain temperature. Then we would know the edge strength for other temperatures.

NOTE—For more information on the physical properties of amalgams, there is a good article in *The Journal of the National Dental Association*, June, 1919, by Arthur W. Gray, Ph.D. This article contains the information that I have wanted for years.—F. B. D.

## THE IDEAL DENTIST, SCIENTIFIC AND CULTURED\*

BY ISAAC N. CARR, D.D.S., DURHAM, N. C.

IT IS NOW, as never before, being fully recognized that as a preliminary to any branch of scientific learning or skilled industries, we should have a good college education. It is a feature of this active, scientific and progressive age that well-trained, industrious people whether men or women, are in constant demand, and the best schools, and especially technical schools, are being taxed to the utmost to supply the demand. Excellence is the warrant of success, and the superficial dawdler is out of place. There was a time when he could sleep in the shade and loiter in green fields, but now the great industrial army must "keep off the grass." The world is busy, and trained intellect and skillful hands are needed now as never before. Education is intended to secure these results, and we therefore look to our schools and colleges to prepare young men and women in such a way that they will be fully prepared to enter any of the professions or arts of trade.

But the dental student must have in addition to his high school or college training, mechanical ingenuity and skill, and the more the better; for without these he will never succeed as a dentist, and even a genius will find difficulties calling for the exercise of his best trained energies and his greatest skill—problems that will tax his highest faculties; and always the social need for all his varied and substantial accomplishments. There is a crowding in all the professions and in all the more lucrative pursuits, but the crowding is all on the lower level; higher up there is always room; for the unskilled and unlearned cannot get there. The colleges of our country have gradually raised their standard, till now the matriculates of our reputable dental colleges must submit to a thorough examination in English grammar, arithmetic, modern history and English composition, or present a diploma or certificate from a reputable literary institution. In New York State, after a very full discussion at

\*Read before the North Carolina State Dental Society.



the University convocation held some time ago, to which all interested and professional schools had been specially invited, it was unanimously resolved that every degree-conferring institution in the state should be governed by the rules adopted by the Regents; that their academic diploma or its equivalent, should be required as a minimum of preliminary education of every candidate for any degree which such institution may confer. All college faculties who are members of the Association of Dental Faculties maintain and support just such a standard, and it is to my mind the most advanced step for the improvement and advancement of our profession. You cannot build a substantial structure on a poor foundation.

The day is fast passing away when our profession shall be considered divorced from medicine. Henceforth we will be recognized as scientific medical men, practicing a special branch of that noble science. While this cannot be said of many of us who are now in practice, the dentist of the future, if I read the times aright, will be educated medical men; the standard is growing higher and higher and the facilities becoming greater for its attainment.

In our own state, the University of North Carolina, recognizing the failure of medical colleges generally to furnish thorough instruction in those subjects which constitute the foundation of Medical Science, and which are therefore necessary for the intelligent practice of medicine, opened a preparatory school some years ago; and only after the conviction that such a school could accomplish much good was the medical department of the University of North Carolina founded.

If the dental student be first well grounded in the elements of medicine, he will be in a position to enjoy the clinical advantages which the diploma-granting colleges possess. Our best dental colleges have every facility for instruction in the advanced branches, but the very numbers in attendance on these colleges present an obstacle to the correct teaching of the fundamental branches which is seldom overcome.

But with all the learning and varied acquirements of which a young man may be possessed, unless he has character, his education is of little value. Our highest obligation, therefore, should be to perfect as far as possible our own character, and to make it the medium of a pure, hallowed, transforming influence on other minds. It is in character as exhibited in a genuine Christian manhood that our real greatness lies. Men read it as they read no written volume; men listen to it as they listen to no other eloquence; men admire it as they admire nothing else, and by admiration grow into its excellence and become like it. A man's education is incomplete without it, his best energies are wasted, his life a failure. Nothing so enhances his worth in any vocation in life, and we would be untrue to ourselves and unjust to our young men, did we not impress this important truth on them. They should ever keep in view the connection between the intellect and the moral nature. Knowl-

edge becomes wisdom whenever the heart appropriates to itself the ideas of the intellect manifested by its growth and culture and fruitage in the life. In all mental action we should put as much as possible of ourselves. We are the nobler and the better in proportion as thought and language express the force of our nature. To continually improve, both in business and social life, should be our aim, and as a means to the first we should read and digest the best literature of our profession, and to the latter the best books of our best writers.

Books are the best gifts of former generations. Through them the past ministers to us of the present with even more wisdom and devotion than it served its own day. They create a social world of their own, and afford us the most genial companionship that intellect can enjoy. A satisfaction is found in them. If not adapted to our mind, we dismiss them; for we have no character to sustain in their presence. Dignity does not awe; contrast does not humiliate us. Books feed the mind. By them we grow into a larger stature. They add the senses of others to our own, and we gain a clearer sight, a keener touch, a more acute hearing. Our life is multiplied by them. They are the open highways of thought along which we are borne on distant journeys to realms more gorgeous than the East, more fertile than the Tropics. They have a more subtle, penetrating power into our character, comprehend our wants more fully, and respond to our aspirations more kindly and heartily than even our warmest or truest friends. With them we are souls, our disguises are thrown off, vanity ceases its masquerade, pretension endures rebuke, and is patiently silent beneath the probe of reality. And what a vast service they render by interpreting our thoughts by bringing out into open and illuminated spaces the dim conceptions of the mind; by perfecting our half-formed ideas; by assuring our hesitancy and relieving our doubts!

But while much importance should be attached to books in the formation and perfecting of character, we should not read simply for information; that is the least advantage of reading. If you are simply a well-informed man, you will never have much pleasure or power in the exercise of your intellect; nor will society have much use for you. Read that you may get something more than reading. Be a reader that you may step higher and be a thinker. A true education begins where acquirement ends; and at the precise point where our favorite authors terminate their offices within us, the growth of our genuine manhood begins.

There is no station in life where a man has greater opportunities for cultivating the nobler qualities of his nature, of educating the mind, enlarging its views, training its faculties and elevating his spirit, than that occupied by the cultured, cultivated gentleman dentist.

The acquirement of good manners, the practice of genuine, unaffected politeness to all with whom you come in contact; the kind and



gentle, yet firm, manner with which you should treat all your patients, is a task of no small moment. How many efforts have to be made; how many humiliations to be endured; how many defeats borne, ere we learn to practice all these in our everyday life! They are of inestimable value to the young man just starting out on his professional career. It is a type of intellect that is always recognized. In any company it defines itself at once, by its perfect harmony with surrounding circumstances; by the self-possession with which it takes your level, and abates none of its charming dignity.

By precept and example let us who are older show to our young men the reality of what we preach. With these thoughts and my sincere congratulations on what the different state dental societies have done in the direction of elevating the standard of our beloved profession, and in what they are now doing to induce the colleges to recognize the necessity for a higher standard and longer term of studentship, I bid you Godspeed in your noble undertaking.

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### ALVEOLECTOMY\*

BY A. R. BAUMAN, D.D.S., NEW CASTLE, PA.

I will attempt to describe a simple operation for removing abnormal ridges that we find very often after the extraction of teeth.

Dr. J. P. Ruyl, of New York, was, I believe, the first person in this country to perform this operation. Dr. Armin Wald followed very closely in his footsteps, and it is owing to his kindness and generosity that I am able to give the following description. Anyone further interested may read a very complete description, fully illustrated, written by Dr. Wald, in the February number of *The Dental Digest*.

It is well to have study models of both jaws to determine the extent of the operation, also to compare with models of the completed case. Full face and profile photographs also are useful for comparison.

Have your patients in good physical condition, prescribe a cathartic, have them eat light nourishing meals, and get a good night's sleep before the operation.

Have all instruments sterilized, a supply of sterile gauze wipes, cotton swabs, plenty of towels and napkins.

Conductive anesthesia is used for nerve blocking, and the tissues thoroughly infiltrated to reduce hemorrhage. Adjust the head-band and retract the lips to have the field as accessible as possible. Dry the gums and paint with a solution of iodine and alcohol.

An incision is made buccally behind the canine eminence, from about the height of the root apex, downward through the gingivæ. A similar

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\*Read before the Lake Erie Dental Society, May, 1919.

incision is made over the tuberosity, if this region requires it. Make another incision over the gingival margins, labially and buccally, of all teeth to be extracted; sever the adhesions to the process and cut through to the gingival septi. If a tooth be missing continue the incision over the ridge to the next tooth. Release the periosteum from the process with a periosteal elevator, higher than the process to be removed.

Retract the gum with small artery forceps or gum retractors. Take a half-inch mounted, knife-edge carborundum engine stone, and cut a groove about one millimeter deep, as high toward the end of the root sockets as the process is to be removed. Continue this groove over the entire section to be removed, as it facilitates the removal of the process in large pieces and avoids splitting higher than we desire.

The teeth are then easily extracted, the process coming with the teeth. With a narrow-bladed, bone-cutting forceps, cut through the alveolar septi, as high as the groove if possible, and you can pry off any process that may be left very easily. The palatal periosteum is untouched, unless some of the plate is to be removed, when you release the tissues from the process and remove the desired amount. Trim away remaining process with Ronguer forceps, and with a coarse grit carborundum stone smooth all rough places and points. Personally, I like the use of chisels much better for smoothing than a stone.

Irrigate the wound thoroughly with a mild antiseptic or normal salt solution. Release the flaps and have the patient use a mild antiseptic mouth wash every two hours. No sutures are required as open drainage is preferred. Prescribe a laxative and have patient report in from twenty-four to thirty-six hours for observation.

The wound heals in twenty-four to thirty-six hours, and the mouth is ready for an impression for a permanent denture in about ten days, as no further absorption takes place that will affect the fit of the denture.

Abnormal protrusions and formations may be removed from an edentulous mouth with equally beautiful results, giving us a comparatively easy case that may seem difficult or impossible.

In conclusion I will emphasize the fact that strict surgical asepsis *must* be observed throughout the operation.

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### **The American Academy of Periodontology**

The sixth annual meeting of the American Academy of Periodontology will be held in New Orleans, October 17-18, 1919.

Headquarters Hotel Grunewald.

An instructive program is being prepared for members as well as all dentists interested in the development of Periodontia.

GRACE ROGERS SPAULDING, *Secretary*.

803 Empire Building, Detroit, Mich.



# SUGGESTIONS

CONDUCTED BY F. R. CHAPMAN, M.S., D.D.S., COLUMBUS, OHIO

(To Our Readers: Give others the benefit of your practical suggestions by sending a description of them to Dr. F. R. Chapman, Schullz Building, Columbus, Ohio.)

## To Remove Steele Facings

The question is so often asked "How can Steele's facings be removed without breaking?"

Place the bridge in muriatic acid, full strength, over night and they will slip off smooth and clean without injury to facings or bridge.

—N. S. Cox, *Richmond, Indiana.*

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## Sticky Wax

I have always found that the kind we receive from the depots is too brittle. Melt equal parts of sticky wax and ordinary wax and note the results.—H. H. Wainwright, *Commonwealth Dental Review.*

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## Matrix for Boxing the Impression

Take a strip of muslin or some other piece of heavy cloth that has very little lint on its surface, dip it in melted wax until saturated and allow it to cool. When needed, a piece of the desired length and width may be cut off and placed around the impression or tray, to which it can be very easily adapted. The plaster or other cast materials will not adhere to such a band.—F. W. F., *Pacific Dental Gazette.*

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## Plate or Bridge?

There seems to be confusion in the minds of many of our profession as to what constitutes the difference between a partial denture and a removable bridge. When the removable structure is so planned that the saddle receives the burden of the stress, and the abutments are utilized principally for the purpose of retaining the structures, then it should be classed as a partial denture. When the abutments take the burden of the stress regardless of whether or not a saddle is used, then the structure should be classed as a removable bridge, be it made of metal or vulcanite.—N. B. Nesbitt, *Dental Outlook.*

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## Wooden Tooth Picks

I do not believe in them for picking the teeth, but always keep a supply in the cabinet and find them useful for two purposes: (1) Twist a wisp of cotton-wool around the end of the pick and use it for painting the gum with iodine before injecting cocaine. (2) Varnish synthetic fillings in the same manner.—F. M. Wilkinson, *Commonwealth Dental Review.*

### Restoring Lost Margins in Inlays

When the margin of the cast inlay is faulty at the gingival or at any other part, it may be corrected by the following technic: A number of pellets of gold foil are amalgamated with a portion of mercury. The inlay is forced into its seat in the cavity and the amalgamated gold is burnished along the margins that are to be restored. Then carefully remove the inlay from the cavity, being sure that the amalgamated gold is not forced from the inlay. This corrected inlay is now slowly heated to drive out the mercury. The gold will adhere perfectly to the inlay and make a perfect margin.—*T. C. De Mille, Pacific Dental Gazette.*

### Open-faced Crowns

The open-faced crown, although out of favor of late years, is very useful in certain cases of bridgework. An almost perfect fit can be obtained in the following way: After trimming the tooth to be crowned, take an impression of it in dentallac or Kerr's modelling composition and make a model with inlay investment material. Trim this at the neck, cover with thin wax, and after cutting out the face attach a sprue and proceed with the casting process in the usual way.

—*Arthur A. Wilson, Commonwealth Dental Review.*

### Why Facings Break, and a Method of Prevention

Facings do not ordinarily break from the direct strain of mastication, but usually by reason of the flow of gold under or near their incisal edges. Each impact of the opposing tooth causes a little flow, and the gold immediately under the cusp in its endeavor to expand pries off the facing. This physical process can be compared to the splitting of a solid rock by a growing tree.

Repair can be quickly made by grinding away the gold in contact, and thus removing the cause of breakage. Then with pliers flatten the pins on the bridge, bending them slightly together. Select a facing, and grind off its pins. Now grind a groove mesio-distally in the facing deep enough to allow it to seat properly, and cement to place. The site of the groove may be determined by carbon paper or wax. If a close fit cannot be had, paint both pins and facing with cement, and use a very thin mix of amalgam as a filler.

This method of repair is not original, as I had occasion to remove a facing which had been repaired in this manner and which had been in the mouth for fifteen years.—*R. W. Burch, Dental Cosmos.*

### Pulp Removal

The safest method of pulp removal is by local anesthesia, either by injection or by pressure. Pulp tissue removed by these methods need not be contaminated with irritating drugs, nor need the periapical tissue be injured from their effects. The use of arsenic troxid should be dis-



couraged. If arsenic were only used as an obtundent for making possible a painless exposure of the pulp, there would be very much less danger of injury to the periapical tissue. For this purpose it should never be left in a tooth over forty-eight hours, and often only twenty-four hours. Drugs for use following pulp removal should be limited to the least irritating anodynes of the essential oils or their derivatives, preferably oil of cloves or eugenol. The root should be filled after pulp removal as soon as all the pulp tissue can be removed, the canal enlarged sufficiently to give access to the apical foramen, the canal dry, and no pericementitis present. This may be at the second sitting, or it may be necessary to extend the treatment over several sittings before the canal is ready for filling.—*Edgar D. Coolidge, Journal N. D. A.*

### Pulp Capping

The decalcified dentin must first be treated with oil of cloves (the active principle of which is said to be eugenol) for at least two weeks. This both sterilizes and hardens the decalcified dentin. The dressings should be sealed in with one of the temporary cements. If all seems propitious after two to four weeks, the tooth is isolated with the rubber dam, thoroughly dried with hot air and a paste, made of zinc oxid and oil of cloves, spread over the floor of the cavity. This is covered with a concaved metallic cap, preferably of iridio-platinum. This concaved cap is filled with the paste and carefully placed in the cavity, so as to bridge over the possible point of exposure of the pulp, and thus serve as a protection against masticatory stress. This cap also prevents the admixture of the oil-of-cloves paste with the oxyphosphate. Over this metallic cap is placed a covering of oxyphosphate cement, mixed to a dough-like consistence, and carefully packed in the cavity and against the side walls.

Two points are to be accentuated. *First*, that this method is only recommended in cavities where the decalcified dentin overlying the pulp is in the form known as leathery decay. A pulp underlying truly carious and fully disintegrated dentin is not a "good risk," as our insurance friends would say. *Second*, as much of the decalcified dentin must be removed as can be removed without exposure of the pulp. This particularly means that small spoon excavators should be carefully used around the periphery of the cavity, completely removing all decalcified dentin from the juncture of the enamel and dentin immediately under the cusps. Occasionally it will be safer to leave this until after the cement has set, as at that time it can be removed without danger of peeling up a layer that will extend across the floor of the cavity, and perhaps expose the pulp, causing it to bleed. But before placing any permanent filling, all this decalcified dentin under the occlusal enamel must be removed, so that the true limitations of "extension for prevention" principles may be indicated.—*Dental Items of Interest.*

### Inlay Restoration of Incisal Corners

In making a cast-gold anterior corner restoration, cut an appropriate part of a celluloid tooth form, oil it, melt casting wax into it, then place in position on the prepared tooth and hold under pressure while the wax is cooling. Remove the celluloid form, and trim and polish the wax model.

If a pin is used for anchorage, attach a small amount of wax to the pin before placing it in the tooth, then place the form filled with wax in position, and finish as in the former case. This method results in accurate margins and a well-fitting inlay, and has proved a most satisfactory method of restoring incisal corners.—*E. G. Lee, Dental Cosmos.*

### A One-piece Backing for Steele's Facings

The advantages of the following method are:

*First*, it is quickly made.

*Second*, it is a one-piece backing and there are no rivets to avoid in letting down the tooth.

Cut a piece of No. 31 American gauge or .009 crown gold, as long as the tooth to be backed and a little wider.

Take an inch of .021 wire (Gunthorpe's gold cased ex. thin size wire is the right size). Bend the gold over the wire and grip the ends in a hand vice; still holding the gold in the vice, nip it close up to the wire with a pair of cutting pliers. Remove the vice, hold the gold with the cutting pliers, bend the flaps back and tap them straight with a riveting hammer. Remove the wire, file away the gold bar thus formed so as to allow the backing to extend a line past the edge of the tooth. Burnish the gold to fit the tooth.

I find it saves fitting if the soldering is done with the tooth in place, and as no metal is incorporated in the porcelain there is very little risk of checking the tooth.—*A. G. Attenborough, British Dental Journal.*

### Unusual Sequelæ of Extractions

The history of the following two cases may be of interest in so far as they are unusual, and helpful as indicating a condition, which although no doubt rare, may be the cause of pain and suppuration, following extraction, especially in those cases where one would not expect to find any untoward sequelæ.

*Case 1.*—Miss H. came under my care suffering from neuralgia. The first left lower molar and the roots of the second left lower molar were extracted. Pain still persisted and six days after the operation an X-ray plate was taken.

The plate showed a small foreign body lying in the socket of the first molar and a smaller speck in the socket of the second molar. These turned out to be small pieces of a metal filling, which had been fractured and dislodged from the first molar during extraction and had then fallen



into the sockets. The metal was extruded by the tissues before I was able to see the patient again, but was recognized by her as amalgam.

*Case 2.*—Lieutenant M. consulted me, giving the following history: A month previously he had had a lower molar extracted under  $N_2O$ ; the area had been tender ever since and at times he got a nasty taste in his mouth which he attributed to some cause connected with that area. On examination one found he had lost the first right lower molar.

At first glance the gum seemed to have followed the natural course of healing. But on applying pressure with the finger, pain was elicited and a bead of pus exuded from a small opening on the lingual margin of the gum, over the anterior socket. The first diagnosis to occur to one, was that at the bottom of the socket would be found a piece of necrosed bone or a piece of fractured tooth. Examination with a probe proved that diagnosis to be erroneous, and gave me no assistance in forming another. I got an X-ray plate taken which, remembering my previous case, immediately settled the diagnosis, for lying in the anterior socket could be plainly seen a small piece of metal, which could only have been derived from a filling or forceps. The patient informed me that the tooth had had a large amalgam filling in it. This no doubt had been fractured in extraction and a small piece had fallen into the socket.

The socket was scraped out with a sharp spoon, dislodging a small speck of amalgam filling; healing then followed in the normal way.

—*F. C. Wilkinson, British Dental Journal.*

### **Removing Steele's Facings from an Old Bridge**

An easy and convenient method of removing Steele's facings from an old bridge is to boil the bridge in dilute nitric acid for from ten to fifteen minutes, when the facings can be readily removed.

—*W. H. Conklin, Dental Cosmos.*

### **Contouring Synthetic Fillings**

To very easily establish proper contour and at the same time obviate the excesses attendant upon filling large anterior cavities with synthetic porcelain, the following method is presented:

After proper and complete preparation the cavity is filled with temporary stopping, which is modeled to the exact reproduction necessary in the finished product, including form, margins, contact point, etc. An impression of the tooth is then taken in modeling compound, held between the fingers and pressed around the site of reproduction. When hardened it is removed and broken at the incisal tip, thus forming two molds. Each side of these molds presenting toward the cavity is coated with cocoa butter. The temporary stopping is then removed and all preparations necessary before filling are carried out. The lingual mold is now returned to its original lingual position over the tooth. The synthetic porcelain having been mixed is pressed into perfect contact

with all parts of the cavity, leaving a slight excess on the labial side. The labial mold is first pressed tightly into place, and then the lingual mold. The junction of the two molds at the incisal tip should be perfect. When the synthetic porcelain has set sufficiently the molds are removed, leaving in place a filling which requires only finishing.

An added advantage of using this method is found in the fact that no manipulation of the synthetic porcelain is necessary during a period when any kind of stress is detrimental to the strength of the finished product.—A. Kaplan, *Dental Cosmos*.

### **Mistake in Vulcanization**

Most vulcanizers are equipped with a thermometer, but not a steam pressure gauge. Also most brands of vulcanite are made to vulcanize at 320 degrees F. or 310 degrees F. heat. Since the bulb of the thermometer has the heat transmitted to it by means of a mercury bath in the lid of the vulcanizer, there is a wide margin for error in determining the real vulcanizing heat. Radiation, moisture in the atmosphere and the season's temperature will contribute to the failures attending the vulcanizing process. The real heat within the chamber is usually from 10 to 20 degrees hotter than the reading on the thermometer.

—F. W. F., *Pacific Dental Gazette*

### **Stippling the Pink Vulcanite**

The gum tissue in the natural state never presents a smooth and polished surface similar to the polish of a highly-polished denture, but rather a stippled appearance. Such a surface may be obtained on a denture by first going over the pink vulcanite with a dull round bur and then stippling this uneven surface with a deep serrated plugger point on the automatic plugger.—F. W. F., *Pacific Dental Gazette*.

### **About Temporary Dentures**

After extraction, the question of immediate or delayed prosthesis will always force itself upon the operator and patient. The solution of this question is frequently not based upon physiological reason. The patient is usually consulted regarding the amount of money or he should be willing to invest without considering the real needs of the case, and not infrequently the operator will advise delaying restoration. He has two reasons for doing so: *First*, the substitution of the artificial teeth will be easier six to nine months after extraction than if the work is done at once; *second*, if the restoration is delayed the patient will save one fee, but on the other hand will remain toothless for this period of time. The patients are usually willing to do this because of the saving of one fee and the operator's statement that the case will fit better after resorption is complete.

Fortunately, these two reasons are insignificant when compared with the real and major reason for immediate prosthesis. In looking over the



writings of leading prosthetists, I noted the following minor reasons for immediate prosthesis: To serve the patient by giving him teeth upon which to masticate during the interim between extraction and completed resorption; that the patient will more easily adapt himself to the presence and use of the substitute if he does not have to wait months before it is placed in position; that the patient will not have to appear toothless in public and thus avoid the humiliation and unkindly comment in reference to the patient's age, and lastly, that the alveolar ridges will resorb more uniformly under the dentures with a better and firmer ridge upon which to build the permanent dentures as the result.

I shall not comment upon any of the above reasons unless it be the last one. It has been my experience, in replacing a poorly constructed primi-denture, that the ridges were everything but uniform and smooth, and not infrequently such a case becomes a real problem, owing to the careless adaption of a "temporary denture."

—F. W. Frahm, *Pacific Dental Gazette*.

### **Veneering Vulcanite Dentures**

It is a well recognized fact that the tissues tolerate black vulcanite better than any other color. This desirable result may be had in the following manner without the danger of having a porous case, or the exhibition of the black case when the patient opens the mouth. Pack the case in the usual manner, but not quite as full as required, test the case, open the flask and stretch a sheet of the black vulcanite quite thin and place it over the other vulcanite. Trim it to the outline of the denture, close the case and vulcanize in the usual manner.

—F. W. F., *Pacific Dental Gazette*.

### **Restoring Lost Margins in Inlays**

When the margin of the cast inlay is faulty at the gingival or at any other part, it may be corrected by the following technic: A number of pellets of gold foil are amalgamated with a portion of mercury. The inlay is forced into its seat in the cavity, and the amalgamated gold is burnished along the margins that are to be restored. Then carefully remove the inlay from the cavity, being sure that the amalgamated gold is not forced from the inlay. This corrected inlay is now slowly heated to drive out the mercury. The gold will adhere perfectly to the inlay, and make a perfect margin.—T. C. DeMille, *Pacific Dental Gazette*.

### **National Association of Dental Faculties**

The annual meeting of the National Association of Dental Faculties will be held in Parlor E, Mezzanine Floor, The Grunewald Hotel, New Orleans. The meeting will be called on Saturday, October 18, at 9 A.M., and will last through Monday.

C. C. ALLEN, *Secretary*.

# SOCIETY ANNOUNCEMENTS

## **Association of Military Dental Surgeons of the United States**

The annual meeting of the Association of Military Dental Surgeons of the United States will be held at New Orleans, La., October 20th-24th.

R. W. WADDELL, *Secretary- Treasurer*

347 Fifth Avenue, New York.

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## **Northern Indiana**

The thirtieth annual meeting of the Northern Indiana Dental Society will be held at Muncie, Ind., on Wednesday and Thursday, Sept. 10 and 11, 1919.

A cordial invitation is extended to all dentists to attend.

EARL BROOKS, *Acting Secretary.*

Noblesville, Ind.

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## **International Prosthetists**

The First Annual Meeting of The International Society of Prosthetists will be held in New Orleans, October 17th and 18th.

The officers of this new Society which was tentatively organized during the last meeting of the National Dental Association in Chicago are as follows: W. A. Giffen, Detroit, president; Russel W. Tench, New York City, treasurer; Dayton D. Campbell, Kansas City, secretary.

DAYTON D. CAMPBELL, *Secretary*

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## **Meeting of School Clinicians**

A special conference of dentists operating in school dental dispensaries and of persons interested in such is to be held in New Orleans at the time of the National Dental Association meeting, October 20-24.

At a similar meeting held June 13th at Syracuse during the New York State Dental Society meeting, so much interest was shown that a committee was named and instructed to call this National conference.

All persons interested are requested to extend their suggestions or questions to the committee.

DR. WILLIAM H. LEAK, *Chairman.*

Oral Hygiene Inspector,

New York State Department of Education.

DR. S. R. MEAKER, Auburn, N. Y.

DR. ERWIN SCHEID, Dental Director,

Chazy Central Rural School, Chazy, N. Y.





# NATIONAL DENTAL ASSOCIATION ANNOUNCEMENTS

New Orleans, August.—New Orleans always has been light-hearted and gay and even in this cycle of industry when all the world is scrambling to forge ahead, the Crescent City still has a moment in which to entertain the strangers within her gates. To the delegates attending the National Dental Convention, New Orleans renews her pledge to make their visit long to be remembered. During the time business slacks, the visitors are assured a pleasurable time.

Never too hot, never too cold is a good way to describe the climate of New Orleans. Surrounded on three sides by water, the city enjoys a mild, moist brand of weather. In October the temperature lurks between a light chill and an Indian summer warmth and records show this month has a high average in the sunshine column. July is normally the warmest month and the average yearly mean temperature for forty-six years is 55.6. Only seven days in forty-three years have seen the mercury rise over 100 degrees, a record hard to touch.

This climate makes it possible to enjoy outdoor sports the year 'round. This is why New Orleans boasts a winter baseball league and games are played in December and January. New Orleans offers such sports as fishing; duck and snipe shooting in the marsh lands; tennis; golf; swimming; yachting; motor-boating; motoring the year 'round; horse racing; a galaxy of theatres, and the famous French Opera during the winter months. Under such weather conditions, visiting dentists may feel reasonably sure of conducting their golf tournament without interruption.

New Orleans is the greatest sea food market in the world, and for this reason the sport of fishing is unsurpassed in the lakes and bayous surrounding the city. Every variety of game and food fish abounds, and a day of fishing in these waters will linger in the archives of memory.

The Metropolis of the South is primarily a city of fashionable clubs, fraternities and homes. The clubs include the Boston, the Pickwick, the Chess, Checkers and Whist, Southern Yacht Club, Country Club, Round Table Club, Audubon Golf Club, and the Louisiana Club. All of these have homes which will be thrown open to the visitors. The Elks have the finest club house in all Elksdom and it will be open to the visitors. The Shriners have just built a magnificent mosque and the Masons have a building in keeping with their national standard. The Knights of Columbus also occupy a prominent place among the lodges.

And, of course, there is always the French Quarter in which visitors may find the lights

and shadows of yesterday—a truly wonderful place in which one might spend weeks without seeing everything. There is, however, quite enough within a stone's throw of Canal Street to excite the curiosity of the most blasé.

A trip along the river front will prove most enjoyable and it is almost certain the entertainment committee will arrange something of this nature, there being several sight-seeing steamers docked here at all times. New Orleans has the greatest inner harbor in the world, with forty-one miles of frontage at which eighty ocean-going ships may berth at once. This includes the Inner Harbor Navigation Canal, linking the River and Lake Pontchartrain with a lock-level channel thirty feet deep, six miles long and which connects all railroads and steamship lines. Port facilities valued at \$13,551,206, include steel sheds and docks covering nearly eighty miles with 4,478,000 feet of covered floor space.

New Orleans has just completed a \$15,000,000 army supply base warehouse of concrete construction—one of the greatest building projects in the history of the South. The warehouse covers forty-eight acres and has three units of the same design, each 140 by 600 feet, six stories high, with a two-story steel and pile wharf and warehouse 140 by 2,000 feet. Eight ships can be loaded simultaneously at this wharf.

Other sights to be seen include the Chalmette Battlefield, the American Sugar Refinery, the largest single unit plant in the world, the largest mahogany manufacturing factory in the world, the great municipal grain elevator and ninety-four parks with a total area of 905 acres.

New Orleans has seven Class "A" Hotels, which include the St. Charles, Grunewald, Monteleone, Lafayette, De Soto, Cosmopolitan and the Planters. The following hotel rates will prevail:

## LEADING NEW ORLEANS HOTELS AND THEIR RATES

**GRUNEWALD HOTEL**, University Place off Canal Street. 500 rooms.

Single room with bath for one person, \$1.50 per day—for two, \$2.50 and up.

Single room with bath for one person, \$3.00 per day—for two, \$4.00, and up.

Double room without bath for one person, \$2.00 per day—for two, \$3.00, and up.

**ST. CHARLES HOTEL**, St. Charles and Common Streets. 500 rooms.

Rooms occupied by one person, without bath, \$2.00 to \$3.50.

Rooms occupied by one person, with bath, \$2.00 to \$7.00.

Rooms occupied by two persons, without bath, \$4.00 to \$6.00.

Rooms occupied by two persons, with bath, \$5.00 to \$10.00.

Parlor, bedroom and bath, \$10.00 to \$25.00.

**HOTEL MONTELEON**, Royal at Iberville Streets. 300 rooms.

Single room without bath, for one person, \$1.50 per day, and up.

Single room with bath, for one person, \$2.50 per day, and up.

Double room without bath, for two persons, \$2.50 per day, and up.

Double room with bath, for two persons, \$3.50 per day, and up.

**HOTEL DE SOTO**, Baronne at Perdido Streets. 300 rooms.

Single rooms without bath, \$1.50 per day and up.

Double rooms without bath, \$2.50 per day, and up.

Single rooms with bath, \$2.50 per day, and up.

Double rooms with bath, \$3.50 per day, and up.

**COSMOPOLITAN HOTEL**, 120 Bourbon Street. 100 rooms.

Single rooms without bath, for one person, \$1.00 per day, and up.

Single rooms with bath, for one person, \$2.00 per day, and up.

Double rooms without bath, for two persons, \$2.00 per day, and up.

Double rooms with bath, for two persons, \$3.00 per day, and up.

**LAFAYETTE HOTEL**, St. Charles and Lafayette Streets. 80 rooms.

Single room without bath, for one person, \$1.50 per day, and up.

Single room without bath, for two persons, \$2.50 per day, and up.

Single room with bath, for one person, \$2.00 per day, and up.

Single room with bath, for two persons, \$3.00 per day, and up.

Double rooms with bath (twin beds) \$5.00 per day, and up.

**PLANTERS HOTEL**, Dauphine and Iberville Streets. 75 rooms.

Single room without bath, for one person, \$1.00 per day, and up.

Single room with bath, for one person, \$2.00 per day, and up.

Double room without bath for two persons, \$2.00 per day, and up.

Double room with bath, for two persons, \$3.50 per day and up.

### Delaware—Joint Meeting

Dover, Dela., June 13.—A joint meeting of the Tri-County Dental Association, the Central Dental Association and the Hudson and Union Dental Society was held here Wednesday, at the Pine Terrace Inn. Rain spoiled a program of field sports that had been arranged, but a three-round boxing bout was engaged in between a dentist who served in the army and one who was in the navy.

Lieutenant Colonel William B. Martin, of Elizabeth, told of his experiences in France as an ammunition train commander.

The Tri-County Association held its ninth annual meeting just before the joint gathering. These officers were elected: President, A. B. Osmun, of Morristown; vice-president, H. G. McElroy, of Dover; secretary, T. K. Hayward, of Washington, N. J.; treasurer, B. W. Crane, of Morristown; trustees, R. C. Vreeland and J. R. K. Moody, of Morristown. Three new members were admitted: H. H. Hann, of Dover, and S. K. Granville and H. R. Romine, of Morristown.

### Florida—State

Tampa, June 21.—(Special). Dr. F. S. Robinson was chosen president of the Florida State Dental Society at the final meeting today of the annual convention, which has been in session here for several days, and Miami was selected as the 1920 meeting place.

Other officers elected are: C. J. Carabello, of Tampa, first vice-president; J. S. King, of Marianna, second vice-president; J. R. Lynn, of Fernandina, recording secretary; H. B. Pahmshall, of Jacksonville, corresponding secretary-treasurer.

A committee was appointed to prepare a bill for submission to the 1921 session of the legislature providing for one hour a week to be devoted to dental instruction in the public schools as a part of the teaching of hygiene.

### Mechanical Dentistry for Reconstructed Soldiers

Mechanical dentistry is one of the occupations selected by the Federal Board for Vocational Education for discharged service men who must be reconstructed or readjusted ere they take their places in civic life again. A number of men have been sent by the board to the School for Mechanical Dentistry, maintained by the West Side Y. M. C. A., of 318 West Fifty-seventh Street, New York City, tuition fees being paid by the government. These men, as other students, are taught by actually doing the several processes, the making of plates, bridge work, crowns and all other mechanical parts of dental work, from casts furnished by the dentist. They actually make these things until they become letter perfect and until they master each process. It is the only school where the casting of porcelain is taught. F. Moren Babcock is director of the school.



# OHIO STATE SOCIETY

Through the generosity of the publishers of THE DENTAL SUMMARY, this space is made available for the use of the State Society and its Components in making announcements of general interest. The secretary of the State Society will use this medium as occasion requires and it is hoped that this will prove a valuable means of disseminating information to the Components and to the membership individually.

Many members have not yet paid their dues for 1919; the mailing list of THE DENTAL SUMMARY and of the *National Dental Journal* is made up from those who are in good standing, i. e. those whose dues are paid for the current year. If you have not paid yours, please do so at once and secure your journals regularly from the beginning of the year.

F. R. CHAPMAN, *Secretary.*

## Committees for 1919

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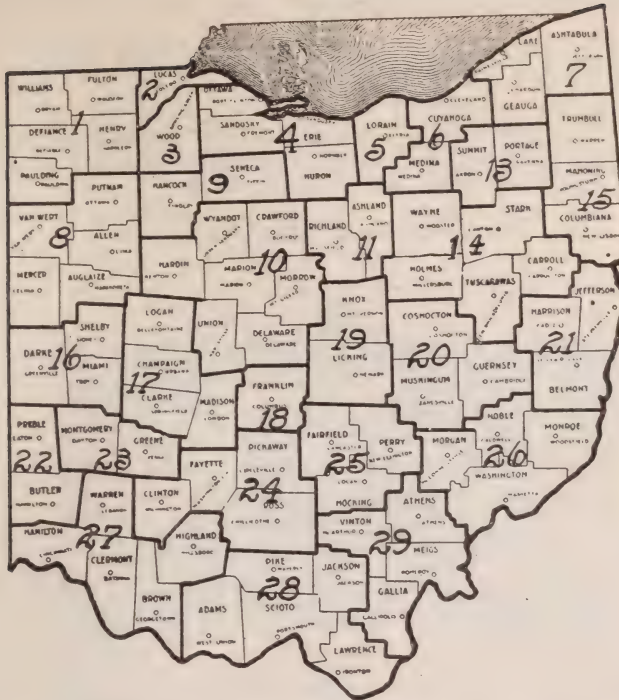
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## The Component Societies of the Ohio State Dental Society

(This list of Officers is compiled from information furnished by the Secretaries of the various Components; where incorrect it is due to lack of information relative to elections. Secretaries are requested to keep the list correct by notifying the secretary of the State Society or the Editor of THE DENTAL SUMMARY of the result of elections.)

- 1 MAUMEE VALLEY DENTAL SOCIETY, meets 2d Tuesday, June and Oct.—Pres., A. B. Thompson, Metamora; V. Pres., N. A. Cunningham; Rec. Sec., O. S. Applegate; Cor. Sec., H. M. Jordan, Hicksville; Treas., J. A. Benner.
- 2 TOLEDO DENTAL SOCIETY, meets 3d Friday. Pres., W. J. Dierks, 1018 Spitzer Bldg., Toledo; V. Pres., R. K. Wood; Sec., L. C. Jackson, 2205 Ashland Ave., Toledo; Treas., C. H. Cox
- 3 WOOD COUNTY DENTAL SOCIETY, meets 2d Wednesday.—Pres., F. W. Wenner, North Baltimore; V. Pres., B. D. Roe; Sec., R. E. Milbourn, North Baltimore; Treas., T. M. Lea.
- 4 NORTH CENTRAL OHIO DENTAL SOCIETY, meets 3d Wednesday, Jan. Apr., July and Oct.—Pres., R. E. Woelstelag, Bellevue; V. Pres., A. G. Thatcher, Fremont; Rec. Sec., L. H. McDonald, Norwalk; Cor. Sec., S. H. Rogers, Sandusky; Treas., E. S. Braithwaite, Willard.
- 5 LORAIN COUNTY DENTAL SOCIETY, meets 1st Tuesday, Feb., Apr., Sep. and Nov.—Pres., W. G. Schaeffer, Amherst; V. Pres., J. A. Minnich; Rec. Sec., P. E. Maddock; Cor. Sec., J. E. Betteredge, Elyria; Treas., J. E. Trombley.
- 6 CLEVELAND DENTAL SOCIETY, meets 1st Monday. Pres., W. C. Stillson; V. Pres., Ira Saum; Rec. Sec., S. F. M. Hirsch, 5415 Euclid Ave., Cleveland; Treas., E. D. Phillips; Cor. Sec., Frank Acker, 14516 Detroit Ave.
- 7 NORTHEASTERN OHIO DENTAL SOCIETY, meets 2d Monday.—Pres., N. H. Bishop, Andover; V. Pres., H. O. Frederick; Sec., O. T. Battles, Jefferson; Treas., O. T. Battles.
- 8 NORTHWESTERN DENTAL SOCIETY, meets 4th Wednesday.—Pres., A. N. Bruzilius, Lima; V. Pres., E. A. Bobo and G. L. Brunk; Sec., J. W. Dimond, Lima; Treas., J. K. Bannister.



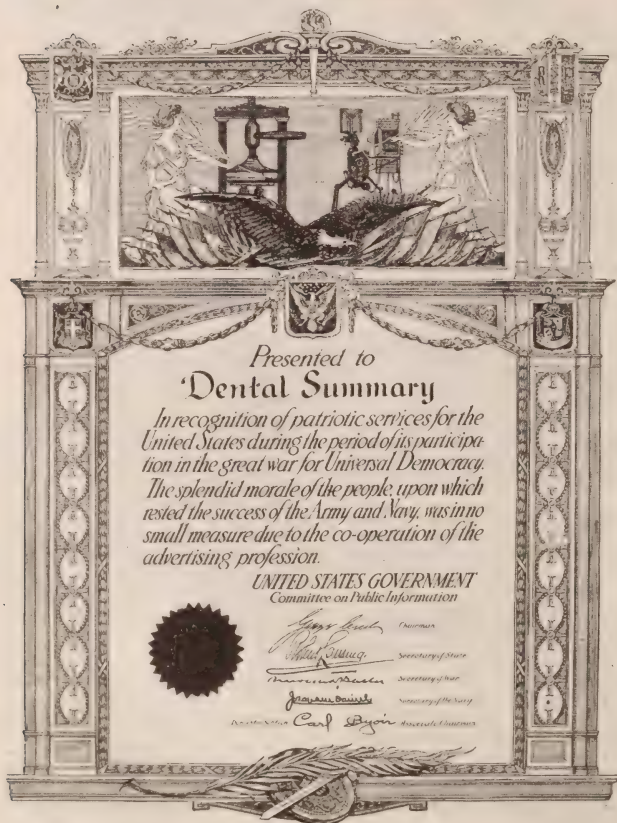
- 9 HANCOCK-SENECA COUNTIES DENTAL SOCIETY, meets 2d Wednesday.—Pres., T. C. Schwartzbek, Findlay; V. Pres., A. O. Cole; Rec. Sec., E. V. Burns; Cor. Sec., A. E. Mann, Findlay; Treas., V. H. Michener.
- 10 CENTRAL OHIO DENTAL SOCIETY, meets 1st Wed., Feb., May and Oct.—Pres., C. B. Emery, Marion; V. Pres., O. M. Young and F. Burger; Rec. Sec., D. G. Welch; Cor. Sec., F. R. Mann, Marion; Treas., F. C. McGaughy.
- 11 RICHLAND-ASHLAND COUNTIES DENTAL SOCIETY, Meets last Monday, Feb., June and Oct.—Pres., J. F. Winans, Shelby; V. Pres., B. W. Livingston; Rec. Sec., F. O. Eckstein; Cor. Sec., J. H. Bristol; Treas., F. H. Williams, Shelby.
- 12 STARK COUNTY DENTAL SOCIETY, meets 3d Wednesday.—Pres., J. C. McConkey, Canton; V. Pres., C. O. Carr; Rec. Sec., E. H. Alden; Cor. Sec. and Treas., B. Hugo Bowman, Canton.
- 13 SUMMIT COUNTY DENTAL SOCIETY, meets 1st Friday, Pres., W. C. Cooper; V. Pres., Jas. Connors; Rec. Sec., H. G. Haas; Cor. Sec., G. H. Dumm, Kent; Treas., C. S. Hoover.
- 15 CORYDON PALMER DENTAL SOCIETY, meets 2d Thursday, April and Oct.—Pres., G. H. Ormeroid, Warren; V. Pres., J. F. Steele and T. J. Evans; Rec. Sec., R. R. Bode; Cor. Sec., J. H. Chessrown, Wick Bldg., Youngstown; Treas., J. K. Nash.
- 16 WESTERN OHIO DENTAL SOCIETY, meets 1st Thursday, Feb., May and Oct.—Pres., A. A. Davis, Troy; V. Pres., P. G. Eddy, J. J. Little and V. E. Bedford; Sec'y-Treas., F. A. McCullough, Troy.
- 17 MAD RIVER VALLEY DENTAL SOCIETY, meets 2d Monday, bi-monthly.—Pres., C. M. Evans, Springfield; V. Pres., ; Rec. Sec., C. A. Dawson; Cor. Sec., S. D. Hockman, Springfield; Treas., H. G. Butcher.
- 18 COLUMBUS DENTAL SOCIETY, meets last Tuesday, Pres. Oscar Miesse; V. Pres., D. P. Snyder; Sec., F. L. Gruber, 731 E. State St., Columbus; Treas., A. O. Ross.
- 19 W. D. MILLER DENTAL SOCIETY, meets 2d Thursday, May and Oct.—Pres., E. V. Prior, Newark; V. Pres., W. S. Deely; Rec. Sec., J. D. Ford; Cor. Sec., L. E. Davis, Granville; Treas., W. B. Grossman.
- 20 MUSKINGUM-COSHOCTON-GUERNSEY COUNTIES DENTAL SOCIETY, meets 2d Thursday, Jan., May and Sept.—Pres., W. H. Dillon, Zanesville; V. Pres., P. F. Walker and A. W. Boyd; Rec. Sec., J. A. Honabarger; Cor. Sec., B. M. Beatty, Zanesville; Treas., H. J. Boyd.
- 21 EASTERN OHIO DENTAL SOCIETY, meets 1st Thursday, May and October—Pres., C. S. Starkweather, Bellaire; First V. Pres., L. B. Peterson, Steubenville; Second V. Pres., George Sharp, Flushing; Cor. Sec., J. K. Hunter, Bridgeport; Rec. Sec., H. A. Smith, Steubenville; Treas., S. C. Hasbronck, Barnesville.
- 22 BUTLER COUNTY DENTAL SOCIETY, meets 3d Friday, each month.—Pres., P. A. Krucker, Hamilton; V. Pres., E. E. Meisterhaus; Sec.-Treas., F. T. Craven, Hamilton.
- 23 MIAMI VALLEY DENTAL SOCIETY, meets last Monday. Pres., H. C. Huffman; V. Pres., H. L. Oliver; Cor. Sec., H. M. Brewer; Rec. Sec., W. B. MacBain; Treas., J. R. Arthur; J. M. Chase; representative to the State Dental Society.
- 24 REHWINKEL DENTAL SOCIETY, meets 3d Thursday Pres., M. G. Phillips, Chillicothe; V. Pres., A. M. Bush and O. A. Thompson; Sec., F. D. Wollard, Washington C. H.; Treas., W. E. Robinson, Washington C. H.
- 25 HOCKING VALLEY DENTAL SOCIETY, meets 1st Monday.—Pres., J. J. Stukely; V. Pres'ts., C. F. Ackers and W. M. Scott; Sec., W. E. Shadrach, Lancaster; Treas., S. D. Vosper.
- 26 SOUTHEASTERN OHIO DENTAL SOCIETY, no report.
- 27 CINCINNATI DENTAL SOCIETY, meets 3d Friday, Pres., S. J. Rauh, Cincinnati; V. Pres., R. W. Taylor; Rec. Sec., Wilson Foster; Cor. Sec., Paul Cassidy, 807 Livingston Bldg., Cincinnati; Treas., J. D. Gordon.
- 28 SOUTHERN OHIO DENTAL SOCIETY, meets, 3d Monday, May and Oct.—Pres., O. D. Donaldson, Portsmouth; V. Pres., F. C. Goodwin; Sec., E. C. Jackson, Portsmouth; Treas., E. O. Buchanan.
- 29 OHIO VALLEY DENTAL SOCIETY, meets 2d Wednesday, Apr and Oct —Pres. M. D. Hartinger, Pomeroy; V. Pres., R. B. Church; Sec., C. S. Shumaker, Pomeroy; Treas., J. B. Hodge, Middleport.



# NEWS and OPINIONS

CONDUCTED BY G. E. HARTER

## A Valued Citation



## An Evidence that We've Done Our Best

### LACONIGRAMS

Yes; the war, our part in it, cost us some thirty billions of dollars, and we shall be still paying for it when our babies are becoming parents in their turn. Well, what of it? Are we exhausted? Are we hungry or unclothed? Do any of us know anything about it except as reminded of it by the cheapness of money, its utter lack of anything like normal value? No matter how many cents or dollars are asked for any commodity under the sun, there is ample demand at any price to exhaust any supply.

I paid \$1.50 for a thirty-cent watermelon the other day; but I had the price! All these things are merely comparative. Eggs at ten cents per dozen are a fragrant memory; but in those days the man who earned a thousand dollars or fifteen hundred a year had a fine job, one of the rare ones, and saved money fast. Today, that same man probably is paying sixty cents for his eggs, while his income ranges around the five thousand mark. Of course, it takes a lot of money now to balance a little value; but we have the lot.

# REGULAR CONTRIBUTIONS

## THE DENTAL SUMMARY

THE MAGAZINE THAT HELPS

Vol. XXXIX

September, 1919

No. 9

### MUSCULAR ACTION IN FRACTURES OF THE MANDIBLE\*

BY S. D. RUGGLES, D.D.S., PORTSMOUTH, OHIO

(MAJOR DENTAL CORPS, A. E. F.)

**T**HE FIRST REQUISITE of successful fracture work is to have a thorough knowledge of the anatomy of the parts and to know definitely the action of the various muscle groups with which you must contend.

No bone in the body has the least resemblance to the mandible in muscular attachment, nor is any other so difficult to control. Twelve pairs of muscles are called into action during mastication and work with such co-ordination that the least derangement of their function means a permanent injury with impairment to mastication and possible disfigurement.

For the convenience of study they are divided into two groups, the depressors or submental and the elevators or mandibular. The true muscles of mastication fall into this group—the temporal, masseter, internal and external pterygoid. The temporal muscle arises from the whole of the temporal fossa and is attached to both outer and inner surfaces of the coronoid process; in fact the inner surface often extends as far as the mandibular foramen. Its tendon is exceedingly strong and acts as a check upon the forward action of the external pterygoid in opening the mouth or the fixation of either side in the act of trituration. (*Fig. 1.*)

With fractures of the ramus where the loss of bone is great, this muscle becomes a serious factor in its upward displacement. (*Fig. 2.*) No muscle in the body works under less mechanical disadvantage than the masseter. (*Fig. 3.*) Its fibers are almost perpendicular to the lever upon which it works and is perhaps the most powerful one of this group. Both heads arise from the zygoma and are inserted over most of the external surface of the ramus. Its action enhances that of the temporal. (*Fig. 4.*)

\*An illustrated lecture given before the Columbus Dental Society, April, 1919.



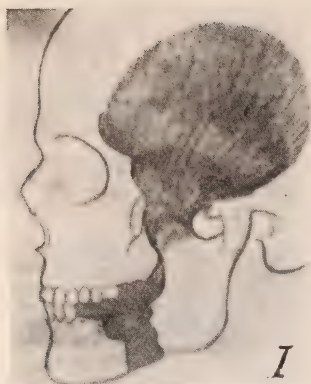


Fig. 1

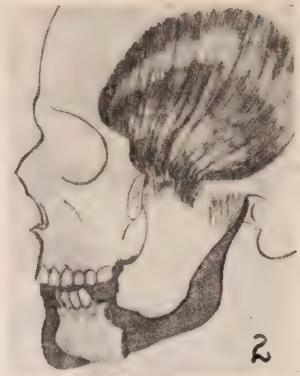


Fig. 2

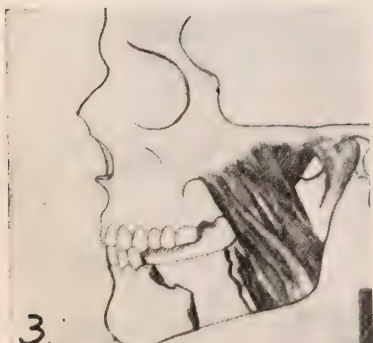


Fig. 3

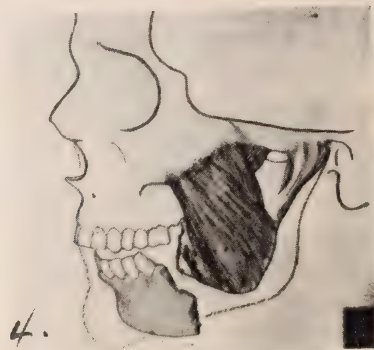


Fig. 4

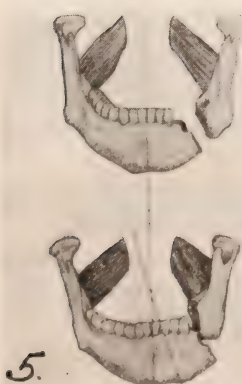


Fig. 5



Fig. 6

The internal surface of the ramus up to the mylohyoid groove gives attachment to the internal pterygoid whose origin is in the pterygoid fossa and the tuberosity of the maxilla.

Thus you will see that the ramus is held between two very powerful short muscles, and this accounts very often for fractures posterior to the angle, especially simple ones, not being discovered except by very careful digital and X-ray examination, for their attachments act as a perfect splint and prevent displacement. Where the fracture is favorable, it tends to cause the internal displacement shown in *Figs. 5 and 6*. This is most difficult to control except with special flange appliances as seen in *Fig. 7*.

One muscle not generally considered in fractures of the mandible is the superior constrictor. It arises from five sources; the internal pterygoid plate, the hamular process, the pterygomandibular ligament, the distal end of the mylohyoid ridge near the reto-molar triangle and the side of the tongue. All the fibers pass backward to meet in a median raphe extending along the posterior wall of the pharynx.

The constant effort to swallow and the movement of the tongue play no small part in the internal displacement seen in fractures of the angle. It is a very able ally of the internal pterygoid.

The mylohyoid arises from both sides of the inner surface of the mandible along the entire length of the mylohyoid ridge, uniting in the center of the mouth to form its floor, uniting also with the hyoid bone.

While its chief function is to raise the tongue, it plays a great part in the displacement of the larger fragment toward the side of the fracture. (*Figs. 8 and 9*.) In the case of a bilateral fracture it works in conjunction with the submental group to cause displacement of the lateral fragments toward the tongue and depress the anterior one.

The strongest member of the submental group is the digastric, which arises anteriorly from the digastric fossa to the lingual of the incisors and has a pulley attachment to the horn of the hyoid, while its posterior belly arises from the mastoid groove of the temporal bone. This muscle in conjunction with the geniohyoids causes the marked displacements in the chin when the fracture is bilateral.

*Figs. 10 and 11* illustrate normal and abnormal conditions. Where the bevel of the fracture is from within outward the mental fragment is to the lingual. Cases of this type are not so difficult to control as would at first appear, as a circumferential wire will maintain it indefinitely over a well-constructed splint.

The X-rays are from British, French and American army hospitals, and while the tissue loss is more extensive than usually encountered in civil practice the principles involved in their reduction are the same.

*Fig. 12* shows the result of high explosive, the ramus drawn to the lingual and at the same time elevated, while the platysma further displaces the detached fragment.



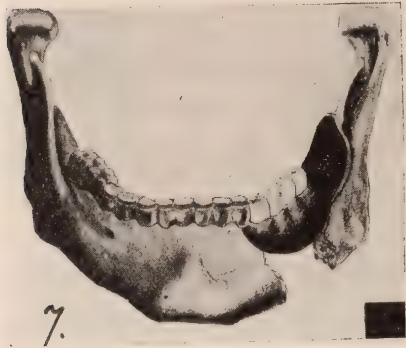


Fig. 7

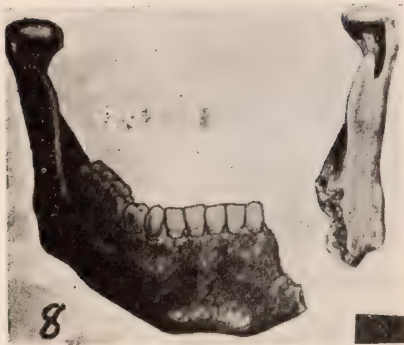


Fig. 8



Fig. 9

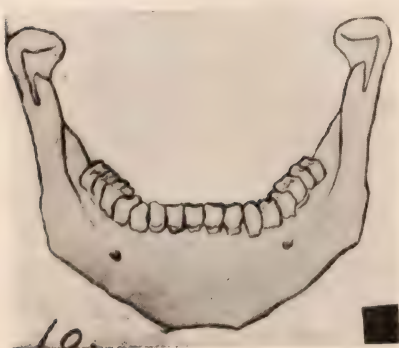


Fig. 10

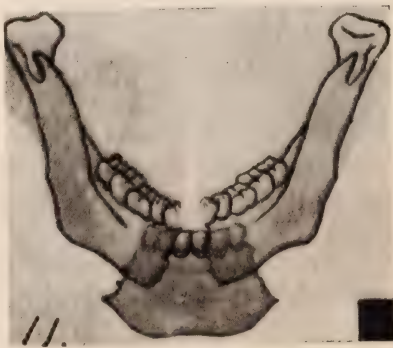


Fig. 11

*Fig. 13* shows bony union five months later. You will note that all teeth and detached bone have been removed.



Fig. 12

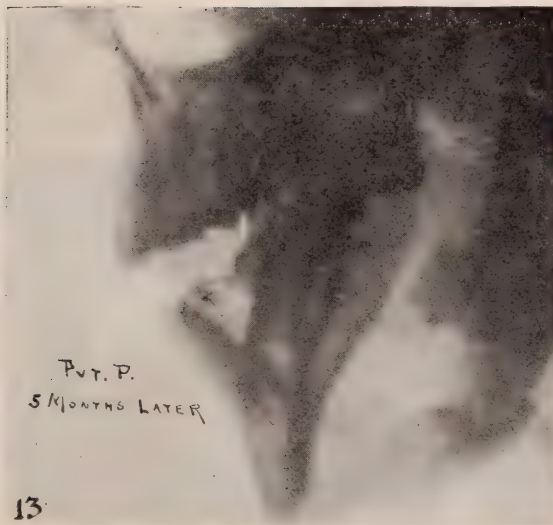


Fig. 13

*Figs. 14 and 15* show the result of an army mule. This is almost as severe as a shrapnel wound, except for the loss of tissue.

*Fig. 16* is quite typical of shrapnel, causing great laceration of tissue and shattering of bone.





Fig. 14

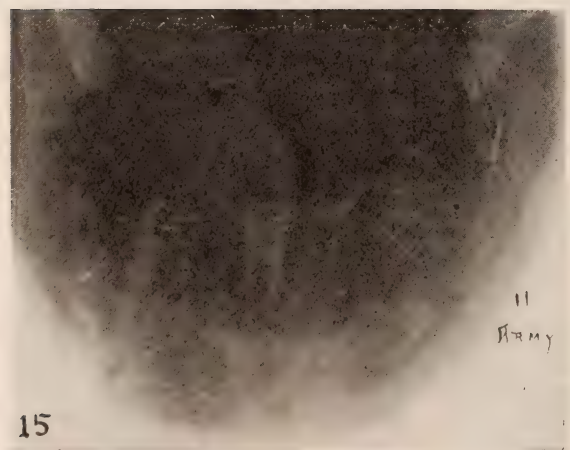


Fig. 15

*Fig. 17* shows what is anticipated from a few bone fragments and injured periosteum if sepsis is controlled. It is surprising the regenerative power in young healthy subjects.

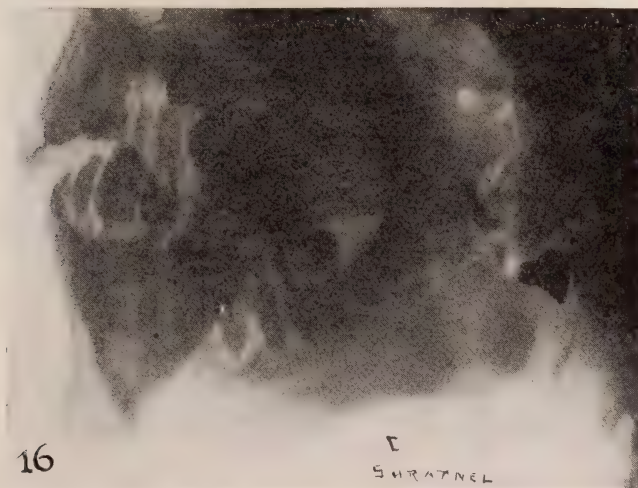


Fig. 16



Fig. 17





Fig. 18

The good position of Nos. 18 and 19, which are of the same case, is no doubt due to the bevel of the fracture which prevents displacement. The last molar however had to be removed and allowed the posterior fragment to become elevated.

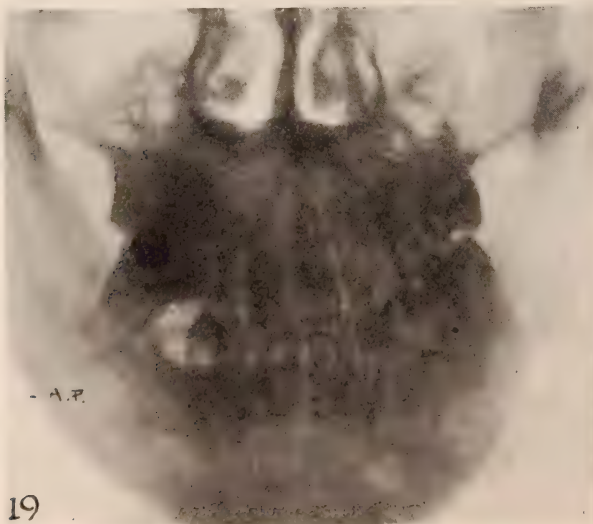


Fig. 19



Fig. 20

*Fig. 20*, a shrapnel wound, illustrates the elevation caused by the mandibular group of muscles to the posterior fragment.

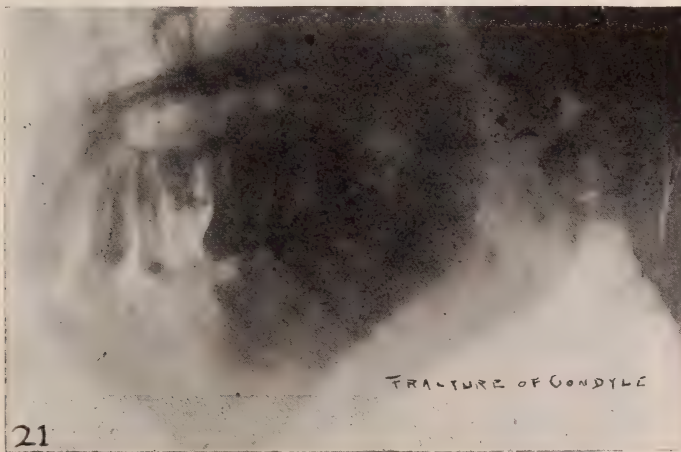


Fig. 21

*Fig. 21* shows many shell fragments and a fracture of the condyle. Very little displacement is noted. Many of these can not be detected without good radiographs.

The following six radiographs represent the same case from the time of entering the hospital until discharged—seven weeks.





Fig. 22

*Fig. 22* shows the result of high explosive; *Fig. 23*, the teeth removed and splint placed temporarily.



Fig. 23



Fig. 24

*Fig. 24* shows the splint cemented and bone repair going on, while *Fig. 25* shows union with elevation of posterior fragment. This method

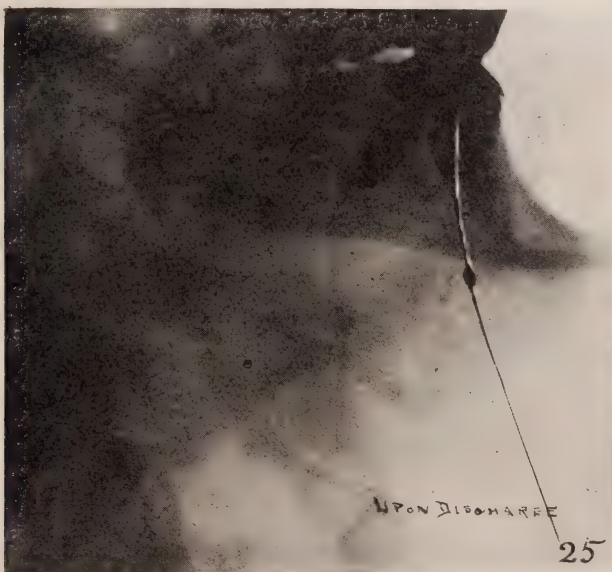


Fig. 25





Fig. 26

was not practiced in American hospitals, as anatomical occlusion was always striven for, even if a bone graft was eventually required. *Figs. 26 and 27* show the finished case.

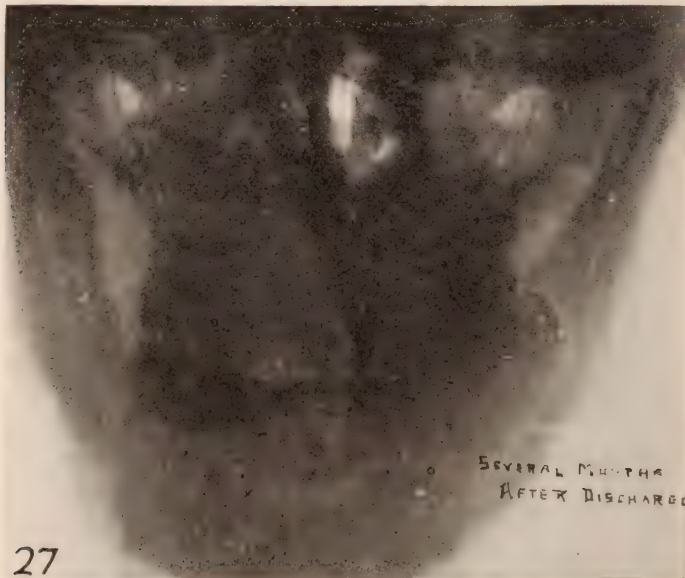


Fig. 27

I wish to acknowledge my indebtedness to *La Restauration Maxillo-Faciale* for some of the diagrams used in this paper, and to my colleague, Mr. J. F. Colyer, of London, for many of the radiographs.

## AMERICAN RED CROSS DENTAL SERVICE

BY CAPTAIN ALONZO MILTON NODINE, D.D.S., A.R.C., NEW YORK

ORAL SURGEON AND DENTAL CONSULTANT FRENCH HOSPITAL, NEW YORK; LATE CHIEF DENTAL  
OFFICER AMERICAN RED CROSS, GREAT BRITAIN; LATE ORAL AND DENTAL SURGEON  
HÔPITAL NO. 32 BIS PASSY PAR VERON (YONNE) FRANCE.

THE AMERICAN RED CROSS DENTAL SERVICE is an activity of the A. R. C. about which little is heard or known. It was organized to supply dental treatment where the United States Army Dental Corps could not or did not functionate. It also supplied dental service for those commissions which were sent to England, France, Germany, Greece, Italy, Montenegro, Palestine, Poland, Roumania, Serbia, Siberia and Russia. Dental service was furnished the Red Cross personnel in those centers in which there were large numbers of Red Cross workers.

The writer was the first Red Cross dental officer to arrive in England. He was sent to England not from a personal preference but because the Red Cross declared that was the only place where dentists were needed. Comparatively speaking this may have been correct. Sailing from New York on the S. S. Orduna, in a convoy of twelve vessels, the vessel docked at Liverpool, July 1st. When the writer arrived in London there was no organized Red Cross Dental Service. There were scores of camps in England, Scotland and Ireland, in which there were from three hundred to several thousand American troops, in which there were no dentists. In France also there were a great many camps, even as late as December, 1918, and January, 1919, in which dental service was absent. The writer met in Paris officers who had traveled there for dental treatment from posts as distant as Grenoble, near the Swiss border.

## THE CHATTIS HILL CAMP

After a week in London, permission was given to go to Winchester. Winchester was the center around which were located a great many aviation camps, tank camps and so-called "rest camps." In this particular region there were urgent and insistent appeals for dentists. Thousands of Americans had been over seas from six to eight months without any dental attention. The writer went to one of the largest of the air service construction camps—Chattis Hills—about twelve miles from Winchester. In this camp there were about one thousand Americans and one thousand British. The camp was well situated on the side of a hill and had many conveniences not found in other camps of this type.

The U. S. S. medical officer, Lieut. Carson, had organized, and with the assistance of the American Red Cross, had equipped a model camp





1. Model Camp Hospital, Chattis Hill; 2. Chattis Hill Construction Camp; 3. 162d Aero Squadron Officers, Captain Allan, the Writer and Lieutenants; 4. Camp Hospital at Chattis Hill, Lieut. Carson; 5. Commanding Officers, Chattis Hill Camp and English Engineer; 6. The Writer, Patient and Orderly, Chattis Hill Camp; 7. Isolation Hospital, Chattis Hill.

hospital. The writer was given the Isolation Hospital for his operating room, and was given every assistance to fit it up and equip it. In this was installed the dental equipment given by Mrs. Whitelaw Reid. He was quartered with the officers, and the fine courtesy and comradeship of these men is one of the finest experiences of his life.

#### ORGANIZATION OF RED CROSS DENTAL SERVICE

In a camp of this size, little work of any value could have been accomplished without system and organization. With system and organization much was accomplished. From the writer's previous experience

with the French in 1916, in Hopital Francaise de New York, Passy par Veron (Yonne), in the Verdun sector, he established the following policy or principles of the American Red Cross Dental Service in England:

*First*, only safe and saveable teeth must be filled.

*Second*, all unsaveable and unsafe teeth must be extracted.

*Third*, an effort must be made to make one side of the mouth capable of chewing food.

*Fourth*, no effort should be made to devitalize bicuspid or molars, or to fill root canals, or cavities in devitalized molars or bicuspid.

*Fifth*, in those cases in which the extraction of diseased, devitalized or infected teeth left both sides of the mouth incapable of chewing food, plates must be supplied.



Left to right—The Writer, Orderly, Dr. Fleming, of London.

*Sixth*, abscessed, previously devitalized, and in some cases freshly-devitalized centrals, laterals and canines—the root canals may be filled and the root ends resected.

*Seventh*, the sockets of all abscessed teeth must be curetted of all diseased tissue, and the ragged and sharp bone smoothed with curettes or bone-cutting forceps, painted with iodine and packed with iodoform gauze.

*Eighth*, all impacted teeth must be extracted.

*Ninth*, all infected gums and pyorrhea pockets should be removed surgically.

*Tenth*, only those cases in which there are considerable deposits and evidences of gingivitis should receive so-called prophylactic treatments.

*Eleventh*, for so-called "trench mouth," a preliminary scaling and polishing of the teeth with pumice, mixed with a little sulphuric acid and glycerin. The sulphuric and glycerin should also be applied to all infected pockets and surfaces, followed by a liberal application of tinc-



ture of iodine, iodide of potassium, and iodide of zinc. The patient should be instructed to use the alcohol, vinegar and water solution as a dentifrice.

#### SEPTIC TEETH

In a few words, the writer's experience in military practice, and in civil practice—with certain qualifications and reservations—convinces him, at least, that the treating and filling of root canals and abscessed teeth are very uncertain operations, whosoever or whatever the technic used. In civil practice a dead tooth to the writer is an anomaly in nature, and always a potential source of infection, however well and aseptically filled the root canals may be.

In military practice, the time spent in treating and filling such teeth, even if this could accomplish all that aseptically and well-filled root canals is generally believed to accomplish; even if this could be done, in the camps in England and in France—the time might be, for the patient, more profitably employed in filling those teeth, which, when filled, would be removed from the danger of destruction and infection. Such teeth when left unfilled must certainly become infected. Several saveable teeth, or teeth of several patients, might be safely and sanely filled in the time necessary to treat and to fill one infected tooth, which, when filled, even under the best conditions, is an uncertain member of the chewing apparatus.

In regard to infected gum-tissue and infected pyorrhea pockets, the writer's experience convinces him that the quickest, sanest and most certain means of overcoming this condition is to remove absolutely the infected tissue surgically, and not to flirt or tinker with it. It is needless to say that the results justify the treatment.

#### HOURS FOR TREATMENT

Having formulated a system of treatment, it was necessary to administer the treatment in as systematic a way as possible, so that as many men as possible could be treated. To do this the day was divided as follows: From 7:45 A.M. to 9:00 A.M., examinations, treatments, dressings, and emergency work was done; from 9:00 to 11:00 extractions and surgical work; from 11:00 to 12:00, noon, was reserved for the British. From 1:00 to 4:30 appointments were made every half hour for fillings and some cleanings. Very often in the summer months and long days when the light was good, appointments were made from 6:30 to 8:00 P.M. This schedule was so arranged that the instruments and materials for each kind of work could be prepared and sterilized, and the other instruments and material put away. As all operations were done under novocain anesthesia, the solution, syringes, and needles could also be made ready. Working with two chairs and a good orderly, the schedule worked smoothly and a good volume of substantial work was accomplished in a seven-day week.

Each squadron or company was examined in turn. When a squadron came up for examination, it was the practice to have the sergeant check off in the following manner the names as the men were examined: Those who needed no dental attention—these amounted to about twenty-five per cent. or more in some of the service squadrons—did not have their names taken. Those who needed only fillings or so-called prophylactic treatment, had "F" or "C" written after their names. Those who needed extractions had "E" placed after the names. At the time these men had their teeth extracted they were again examined for the needed fillings. This made the examinations very rapid, and enabled the taking care of the dangerous and urgent work first.

After the squadron had been examined, a list of names was made out for the hours in the day which had been assigned for the particular work for which the examination called. These lists were posted on the bulletin board of the squadron or company. For the filling operations the appointments were made half an hour apart. Each man was given half an hour if necessary. If additional attention was needed he was given another appointment. In this way each man was enabled to have the most necessary operations completed while those of lesser importance could be left to a later day for treatment in the same camp or another camp. Regardless of the fact that each squadron or company was examined and treated in its turn, the emergency work was taken care of for both camps.

#### EQUIPMENT

As has been stated, two chairs were used. For a while one of the common wooden chairs was fitted with a head rest, made by one of the enlisted men. When the Red Cross dental equipment arrived from New York, one of them was shipped to this camp. It consisted of a small demountable dental engine, a not too substantial wooden folding chair, a student's case for instruments, instruments and dental supplies. As the chair was ill-suited for the work for which it was needed, the writer requisitioned from London a sufficient number of folding chairs such as are supplied the army dental corps. These were very satisfactory. The instruments were a wild assortment of miscellaneous Black's instruments, an assortment of scalers, and a good assortment of plastic instruments. These instruments were later supplemented by suitable spoon excavators and scalers bought in London. There were no instruments for oral surgery work. These were requisitioned from London and consisted of chisels, gauges, curettes, metal hammers, elevators, bone-cutting forceps, scissors, iodoform gauze packing, and gauze sponges. One dental manufacturing company in London was persuaded to make glass barrel syringes suitable for conductive anesthesia, and another long steel needles for the same work. By the time the armistice was signed the Red Cross dental officers were well equipped.



In addition each officer had a painted sign with his name, rank and hours on it.

In addition to seeing that the dental officers were properly equipped and had the proper supplies, they were invited by the writer to spend a few days at the Chattis Hill camp to become familiar with the system and see how the work was done there. The officers called it the "Rest Camp for Dentists."

The writer arranged meetings and gave clinics once every two weeks, to which were invited the officers of the dental corps and the Red Cross dental officers. These clinics consisted of demonstrations of conductive anesthesia, removal of difficult or impacted teeth, root resections, and the surgical treatment of pyorrhea.

#### DENTAL SUPPLY DEPOT

As Winchester was a most important center, around which were a large number of camps, the writer established here a dental supply depot where drugs, materials, instruments, and supplies could be secured by the Red Cross dental officers. This saved time and the expense of sending to London. A prosthetic dentist was soon needed, and an English dental mechanic was secured in London, who came to Winchester with equipment secured in London and established a laboratory in the American Red Cross headquarters. He was also assigned the duty of taking charge of the dental supply room. In the immediate vicinity of Winchester the following Red Cross dental officers were located: Capt. W. P. Shireff, Hursley Park Hospital; Capt. Knox, at Romsey Rest Camp; Lieut. Field, Lobcomb Corners, Air Service Construction Camp; Capt. Knight, Boscomb Downs Aviation Camp; Lieut. Rhodes, Worgret Tank Camp Wareham; the writer at the Chattis Hill Air Service Construction Camp. There also were Red Cross dental officers at Hounslow Aviation Camp and King George's Hospital, London.

A number of members of the American Dental Society of London volunteered, at a great personal sacrifice, to give part of their time to the American Red Cross. After the second equipment arrived at Chattis Hill, the writer invited these dentists to the Chattis Hill Camp. It was arranged that each man gave one day every two weeks. They would come down on a late afternoon train from London to Stockbridge—the railroad station for Chattis Hill, and stay over night in the hotel. The camp ambulance would call for them in the morning and bring them to the camp. Then they would take a later afternoon train for London. Each man spent one day in the camp every two weeks, so that the camp had two dentists working every day for about two months. The dentists who gave their time to this work in the Chattis Hill camp were Drs. Donohue, Fleming, Gillette, LeCron, Lockett, McCallum, McDermid, Monk, Smith, Steward, Sturridge, and White. And Dr. Roberts and some others gave their time to camps nearer London.

One of the enlisted men from the medical corps was assigned to act as assistant. He sterilized the instruments, kept the operating room clean, made out reports and later was taught to scale and polish teeth. After the writer's work was finished for the day his assistant was given the opportunity to make a little extra money for himself by cleaning and polishing the teeth of some of the men, for which he charged a couple of shillings. In the morning the writer would examine these men to see that the work was done properly.

#### AMERICAN BOYS' TEETH SOUND

The American dentists who came to the camp noted the soundness of the teeth of the American boys and the care which they gave their teeth. This was in marked contrast with that of most of the British Tommies. The writer accounts for this, *first*, by the fact that most of the British eat a much greater quantity of jam and sweets than the Americans and less fruit; *second*, they drink a great deal of tea which inhibits the flow of saliva, the natural cleansing fluid of the mouth; *third*, they do not devote the same amount of time and energy to the dental toilet as the Americans.

In addition to Chattis Hill, the writer worked in the tank camp at Wareham and the camp at Codford, where he secured his assignment to the 162nd Aero Squadron. This squadron was leaving for France, and the commanding officer was told that the squadron was going to Metz, between the infantry and artillery, with a pursuit squadron. The squadron entrained at Codford, Oct. 24, 1918, with the usual military ceremony of the band preceding it to the station and the commanding officers of the camp reviewing it as it passed out. The squadron embarked at Southampton for LaHavre, with a large number of other troops including part of a negro regiment.

When the troops arrived at La Havre they were marched two miles up hill to a so-called rest camp. Here they stayed for two days during which the writer had some emergency cases. About two o'clock in the morning of the third day the squadron entrained for St. Maxient, east of La Rochelle. We had a leisurely cruise for three days and three nights to this queer old town in the south.

#### ST. MAXIENT

We were quartered in the barracks of a fine new French military training school. Here we refitted and were equipped with a lot of hardware and gas masks. We were given gas mask drills and acquainted with the virtues and discomforts of the mask and the gas. The training school had a fine new hospital, in which a room was provided for the use of the dentist. In it the U. S. A. D. C. officer had installed his field equipment. The dental officer assigned to this post was away at the time, attending one of the dental corps training schools. The writer was given the opportunity to do some work here and was urged to stay.



But the prospect of going up to Metz, where some of the show could be seen, was too interesting to put aside and the invitation was declined on account of "a previous engagement." After a stay here of three or four days we again entrained on third-class cars, for supposedly the front. The third-class cars were all very well, but we could neither sit down, lie down or stand up in any degree of comfort. At the end of a two days' and two nights' cruise, during which we had the opportunity to explore several old chateau towns on the way, we found ourselves somewhere outside of Paris. The night was thick, green and misty. We were in a great, confusing, mysterious, smoky railroad yard.

Army trucks took us to the post. In the thick mist of the ragged edge of a tired night we did not realize where we were. But in the morning we found out that we were at the First Air Service Supply Depot, Clichy, on the Seine, opposite the garbage incinerators. We were then told that we probably would be kept here until the end of the war!

This was the worst disappointment that could come to us. The men had been training in England for eight months with the British, and had been fitted and refitted with equipment, equipment added and then taken away several times, then to be hung up where they would be unable to do any of the work for which they had been trained and were unable to see any of the show, or take part in it!

#### RESEARCH SOCIETY OF A. R. C.

While in Paris the writer attended a meeting of the Research Society of the American Red Cross for the officers of the medical corps of the United States and Allied armies. At these meetings problems of great and wide interest to the medical service were discussed, and the conclusions published in "*War Medicine*," the journal of the Research Society. These meetings appeared so interesting that the writer proposed to Colonel Lambert the holding of a dental meeting for the dental corps, in conjunction with the next meeting of the Research Society. The letter accepting this proposal, was not received until the writer had returned to London after a visit to the old hospital at Passy (Yonne,) to which he was attached in 1916. Permission was obtained to return to Paris to arrange for this meeting under the supervision of Lieut. Col. Harris. With the assistance of Lieut. Col. Harris and some suggestions from Col. Oliver, D. C., this meeting was arranged for. The writer, handicapped by the short time at his disposal, prepared a questionnaire whose intention was to bring out the experiences of the men who had done facial and maxillary surgery and reconstruction work, and also the views and experiences of the men in diagnosing and treating oral focal infections. After these meetings had been arranged for by the Research Society, the members of the executive committee decided to call off the meetings on account of the difficulty of securing hotel accommodations

in Paris, and because of the believed lack of interest due to the fact that the armistice had been signed, and a great many members interested in the society had returned to America. The questionnaire was then sent out with a letter explaining the situation, and with the request that the problems be discussed in writing. When the replies came in they were correlated by the writer and additional research work was done in the Red Cross library to fill in the gaps and make the report complete. The writer had the cordial assistance and counsel of Major Kazanjian, of the B. E. F., in that section of the report dealing with Facio-Maxillary Surgery and Reconstruction. Owing to the fact that there were less than five hundred cases in the A. E. F. in which facio-maxillary surgery and reconstruction was required, the experience of the Americans was obviously limited, when compared with the greater numbers which had come under the care of the British, Canadians, Australians, New Zealanders and French. Major Kazanjian alone had over two thousand cases, and six thousand had passed through the hands of Major Valadia. Majors Waldron and Rison of the Canadians had records of about two thousand cases.

The writer spent some time at the famous face and jaw hospital—The Queen's Hospital, Frognal, Sidcup, Kent. Here could be seen the wonderful work of Newlands of the Australians, Waldron and Risdon of the Canadians, Pickerill of the New Zealanders, and Gillies of the British.

The writer while in the various camps and hospitals of France and England came in contact with a variety of cases in great numbers, which, while they were very interesting from a military point of view, were equally interesting and valuable from the point of view of civil practice.

8 West 40th St., New York City.

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#### **Western and Northwestern Joint Meeting**

The third annual joint meeting of the Western Ohio and Northwestern Dental Societies will be held in the Elk's Home, Lima, Ohio, September 25th, beginning promptly at 10 A.M. Men of national reputation have been secured for this meeting.

J. W. DIMOND, *Secretary*.



## CLASP BRIDGEWORK AND PARTIAL DENTURES\*

BY J. W. BEACH, D.D.S., BUFFALO, N. Y.

THE MEANS I am about to present to you for supplying lost teeth has passed the period of experimentation and may now be reckoned with as a definite and practical method. In the past when I have presented this subject before experienced practitioners of dentistry, I have done so with more or less trepidation and have felt it necessary to preface my remarks with a series of excuses for having the nerve to espouse so radical an innovation. Today I come before you without excuses or qualifications and merely say to you that it has been thoroughly tried and has stood the test.

Just twenty years ago I began the hazardous, crooked and rugged road that has led me to this rostrum today. It has been a "long, long trail" of successes and failures, blessings and curses sandwiched in between hopes and disappointments, always accompanied by a vision of the future which never has failed me. Some wise man has truthfully said that "Where there is no vision, the people die." When the dentist ceases to behold a "vision," he is on the toboggan and the end of the trail is in sight.

To make a long story short, my vision had as its primary concept the conservation of the tooth in its natural state. To devise a means whereby this might be accomplished engaged my efforts more or less continuously; and while I bring this method to you today I do so in the hope that you will find in it something of practical value and will proceed with its development until the ideal has been attained.

The dentist should revere the perfect tooth and protect it with all his skill and knowledge. Take as a living precept that significant passage from Holy Writ, which says: "What God has joined together, let no man put asunder." We can take life but we cannot restore it. Likewise we can with ease destroy a beautiful tooth surface but we never can restore it.

Visions of beautifully-carved gold inlays, shapely porcelains and well-contoured amalgams float before your mind's eye, and without hesitancy you are ready to take issue; but sober second thought tells you that at best the artificial substitute is but an uncertain makeshift and not a true restoration. Rational logic would, therefore, direct the avoidance of such contingency by the employment of a method of bridge-work that will render destruction of sound bridge abutments unnecessary.

Allow me to state that there is very little in what I am to present to you that is original. It is, rather, the adaptation of old methods with

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\* Read before the Lake Erie Dental Society, May 1919

variations, to modern conditions. I do, however, insist that the so-called interdigital wire, which will be shown later, is the child of my own vagaries and I contend that it has uses, at times of potential value.

There are, perhaps, but a few more reasons why you should not use this method of bridge work than the average removable or fixed variety. I will append a few of the most glaring faults:

*First*, unscientific because it does not demand the destruction of perfect abutment teeth.

*Second*, so simple that it does not exhaust the patient in having it done.

*Third*, clasps usually cause teeth to decay about them. Fortunately there is, however, a difference in clasps.

*Fourth*, a small bridge of this type might become loosened and start on its downward career via the esophagus. Yes, this *could* happen, but it never has.

We will pass this phase of the subject now and refer to it later, leaving the good qualities of the method for you to discover.

Some fifteen years ago, while exploiting this subject at a dental meeting in Rochester, the essayist stated that the gold crown as a bridge abutment should be avoided as not more than one in ten was properly fitted to the root surfaces. In discussing the paper the late Dr. Rudolph Hofheinz, whom many of you will remember as one of our most eminent and skillful dentists of that time, placed greater emphasis on the statement by averring that not to exceed one gold crown in a hundred could pass close inspection. He furthermore stated that he knew of but one perfect gold crown and that one was in his own mouth, being the twenty-second one made for that particular case!

Judging gold caps in general by this standard, it is needless to say that few of us ever have placed a correct one. Possibly Dr. Hunter, of London, may have based his condemnation of American crown and bridge work on a relative standard; however, it is needless to add that our former methods of fixed bridge work were productive of a most unhygienic and disease-producing condition.

In a recent address on "Dental Prosthesis; Past, Present and Future," by Dr. Ellison Hillyer, of Brooklyn, he stated that we have reached the parting of the ways in methods of bridge work. He believes the clasp methods have come to stay and are entirely practical. It is apparent that the thinking men of our profession are inclining toward the clasp for bridge retention and are only waiting for the best method of application before according unqualified endorsement.

The cast clasp has latterly been developed to a state well-nigh perfect, and gives adequate support but the adaptation to the tooth is broad and is conducive to decay of the contacting tooth surfaces. The conformed wire clasp needs but three contact points and therefore brings but little of the enamel in contact with it.



We strongly recommend the use of round wires for clasps wherever practicable because of minimum contact with tooth surface. We have yet to apprehend the first case of disintegration from the use of round wire clasps. Few clasps are complete without the occlusal rest or tang which prevents the clasp from pressing upon and causing injury to the surrounding soft tissues.



Fig. 1.

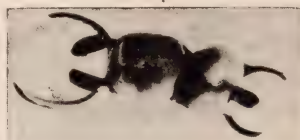


Fig. 2

*Fig. 1* shows how a single tooth may be placed by using Bonwill clasps on adjacent teeth, always using occlusal or lingual rest, as the case demands.

*Fig. 2* represents a bridge supplying two teeth and may be placed with or without a saddle. Longer spans should have saddles to bear a part of the stress.



Fig. 3

*Fig. 3* illustrates a means of supplying lower molars without posterior attachment. This case is entirely feasible and may be employed on the upper jaw as well.



Fig. 4.

*Fig. 4* shows how posterior lowers may be supplied depending upon the anteriors for support. The interdental wire which engages the

cervico-lingual borders of the anterior teeth, forms a positive means of preventing "heel raising;" it makes each tooth an equal factor in retaining the piece; acts as a splint for loose teeth; will positively prevent lodgment of salivary calculus and permits the use of a less cumbersome base wire than would otherwise be the case.

The loop clasp, as suggested by Dr. Roach, we believe to be nearest to the ideal clasp although it cannot be used as universally as the single wire form. This clasp is made of No. 20 round wire to which is soldered the occlusal rest.

The single bar Bonwill clasp is made of No. 16 round, or No. 14 half-round wire, while the base wire is made of No. 11 half-round, and the interdental wire is of round, No. 20.

The Jackson full clasp frequently is employed with good effect, as illustrated in *Fig. 3*. When necessary to obtain anchorage on the side opposite to the teeth to be supplied, the Jackson full clasp usually is indicated and additional support is secured by attaching to the buccal wire, extensions which engage the adjoining tooth mesially and distally, thereby including three instead of two, teeth in the problem of retention.

I regret that it is impossible to illustrate more of the great variety of cases to which this method applies but each employer must work out his own destiny, however, I will be glad to aid any whom I am able.

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### Relieving Pain of Devitalized Pulp

When a patient returns to the office with an aching tooth as the result of a treatment for devitalization, conduction anesthesia may be used with good results. If properly performed the aching subsides in a few minutes, after which the tooth may be thoroughly and painlessly opened up. A new treatment can then be placed in the tooth, or if sufficient anesthesia is present, the pulp can be removed at once. In either instance, a patient relieved of pain will leave the office.

—*Albert E. Converse, Dental Review.*

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### Good Dentistry

Good dentistry is of such vital import to the physical welfare of the patient that it seems as if the time has come when there can be no compromise by doing inferior work just because we think the patient cannot afford it. The knowledge that dental work properly performed is an expensive procedure would arouse the public to a realization of the value of prophylaxis and oral hygiene as nothing else would.

—*Bert Boyd, Pacific Dental Gazette.*



THE ORDINARY CARE OF THE ORDINARY TEETH OF THE  
ORDINARY PATIENT BY THE ORDINARY DENTIST\*

BY DR. F. W. LOW, BUFFALO, N. Y.

I THINK IT WAS a Presbyterian minister who said, "A Text is a certain passage from Scripture chosen as a theme to be most conveniently wandered from."

My text, "The Ordinary Care of the Ordinary Teeth of the Ordinary Patient by the Ordinary Dentist" is not chosen from the Good Book, but in all other respects it fits the definition of the Presbyterian minister, and is a very good text for my purpose in speaking to you today. I have already been in practice over forty years, and any fellow who has been in practice that long is entitled to the privilege to "wander from," at least to wander some.

To begin with I want to tell the circumstance that led to my change of practice regarding the ordinary care by the ordinary dentist.

Dr. Kirk had said at our State meeting that "While Dr. Smith was a most peculiar man, the result of his prophylaxis operations was *truly marvelous*," and as I was appointed committee on practice for the year following, I thought I ought to include Dr. Smith's ideas on prophylactic practice in my report, so I went directly from the State Society meeting to Philadelphia before coming home on purpose to interview Dr. Smith and what I saw and what he told me then was so convincing that I felt obliged to revise my methods completely.

The instruments which I have here for your inspection are not exactly like those used by Dr. Smith on that occasion, but I dare say they are as useful and that there are quite as many of them.

Note now that with such a simple equipment Prof. Kirk testified that the result of Dr. Smith's operations were truly marvelous.

I saw Dr. Smith operate for a patient whom he scolded for having stayed away for more than a month since his last preceding visit. The time employed did not exceed a half hour which the doctor considered ample when patients make frequent visits.

There was nothing spectacular or particularly unusual about the operation. Instead of spending any considerable amount of time in completion of the care of one or two bad teeth, Dr. Smith advocates a general clean up, going as far as may be without causing too much pain, and as conditions gradually improve at each subsequent operation, chasing the serumal deposits a little further toward the extreme depths of the pockets in which they are found until finally after two or three monthly visits they are all completely removed.

\*Read before the Tri-County (N. Y.) Dental Society, 1919.

After instrumentation at every sitting a vigorous polishing of all exposed surfaces of every tooth must follow, the use of the wood point dipped in fine powdered pumice being substituted for revolving polishing devices such as rubber cups and small brushes on the engine.

After this polishing comes gum massage. This Dr. Smith accomplished by winding Japanese bibulous paper into a pad upon the porte polisher point, and, saturating the pad in full-strength phenol sodique, he proceeded to massage well above the cervical margin of the gum, about the necks of all the teeth, using considerable pressure as treatment after treatment succeeded in toughening the mucous covering of the gum.

This gum massage he considered *most* important, and in his opinion there is no medicament efficient other than phenol sodique.

In my own experience, having tried to substitute other lotions for the purpose, when patients objected to the taste of phenol, I have been obliged to abandon the attempted substitutions and return to the use of phenol sodique to accomplish anything. With its use I never fail to remove all spongy and bleeding conditions of the gum.

I must emphasize one other imperative essential to the proper care of even the most ordinary symptoms of the beginning of pyorrhea. If any tooth of any patient begins, in however slight degree, to loosen in its socket, look well to the occlusion of all the teeth. I might say that invariably you will find, and usually in more than one location about the mouth, that there is faulty occlusion. My rule is, spare no teeth for fear that decay may follow cutting the enamel. If an antagonizing tooth drives against a loose one in any direction other than to drive the loose one squarely or directly into its own socket, sacrifice both the antagonizing and the loose tooth until the fault is remedied.

If your grinding has caused either tooth to become sensitive, either to contact, thermal shock, sweets or acids, dip a very slightly cotton-wound broach in Merck 40 per cent. formaldehyde and paint the sensitive surface with this solution two or three times. Follow each painting with hot air blast to drive in the solution. Do this even though it causes some pain. The pain will quickly subside and the tooth become immune. At one or more subsequent sittings this treatment may have to be repeated before perfect immunity to shock is accomplished.

All pyorrhea specialists lay special stress upon the benefits to be derived from so-called "taping of the teeth." I use Cutter's flat floss between all teeth, just before massaging with the phenol pad, and sometimes I must confess to being so unethical as to flood all deep pockets with a cotton-wound broach dipped in a proprietary medicine, namely the so-called Dentinol. After this socket dipping I allow the patient to rinse the mouth, but after the phenol solution no water is allowed. They may spit out the saliva to their heart's content, but *no washie-washie*.



An extremely loose tooth often may be made quite comfortable and serviceable after treatment. Especially is this true if the crib bridge which I make in place of the ordinary partial rubber plate can be made to hold the tooth steady as would a splint on the bones of a broken arm; but if a tooth can be made to rotate in its socket I consider it utterly helpless and advise extraction.

Orthodontists' soft German silver or brass wire is sometimes woven like a cat's cradle about several teeth with very great benefit; but usually the lower front teeth that have to be so treated eventually will be lost.

At the recent meeting of the Buffalo Dental Society previously referred to, Dr. John Oppie McCall read the most interesting paper that I have had the pleasure of listening to, entitled, "Primary Factors in the Etiology of Periodontoclasia." It is published in last December's *Cosmos*, and I would urge all of you who have not done so to give his essay a careful reading.

Two paragraphs I am constrained to quote in part:

"He who represents himself to be a practitioner of dentistry is morally and legally bound to provide for his patients the benefits which the present state of knowledge of the dental art puts within his reach.

"If a considerable number of dentists are able to prevent and to cure dental perioclasia, and if the methods of preventing it are within the grasp of the general practitioner, then the responsibility for the loss of the teeth, whose value cannot be measured in dollars and cents rests squarely on his shoulders."

I take it none of us dare challenge that statement; still loose teeth are going to the "bone yard" every day.

In Dr. McCall's closing paragraph there appears his final admonition.

"Since we find that the causes in practically all cases are under our control, we cannot truthfully take refuge in the old saying that pyorrhea cannot be cured."

Complaint is sometimes made that we cannot control our patients; that they will not come for frequent treatments.

Some time ago a Buffalo dentist, I will call him "Dr. Kidder," at our city society meeting said that he "could not understand how Low managed to hypnotize his patients into coming every month to have their teeth scrubbed;" he couldn't do it. Then he told about two maiden sisters who had heard of my "wonderful reputation" for treating pyorrheal conditions. They wanted to know why he couldn't learn to do the operation for them so that they would not be put to the trouble of employing *two* different dentists.

His reply was: "Oh! I could, only you won't let me."

I rejoined that "there was where he made his mistake; that had he looked them square in the eyes and told them both the salvation of their

teeth and of their souls depended upon the religious prophylactic monthly ministrations of one "Dr. Kidder," he would have had them as completely hypnotized as I had my patients.

There was a time when I burned much midnight oil writing papers to be read at dental meetings, or for magazine publication; and then I guess at last I "sort of run empty." (This is an old saw—meaning that one's talk is such that it proves of no interest to those who are obliged to listen.) For it has been a long, long time since I was even invited to prepare one until now. So I jumped at this opportunity with much the same avidity that a speckled trout jumps at a brown hackle fly early in the month of June.

Dr. Whipple and gentlemen, I thank you for the privilege you have here afforded me to feel like a real boy again, and I thank you for your attention and apparent interest.

52 North Pearl Street

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### THE VALUE OF ORTHODONTIA\*

BY DR. H. N. SHEPARD

**F**IRST OF IMPORTANCE is the restoration of normal parts and of facial contour.

You may be able to correct all other defects caused by irregularities of the teeth, such as abnormal breathing, decay, etc., but after irregularities have become moulded and set with old age, there is very little to be done to correct the trouble. Protrusion of the mandible when extensive is one of the most conspicuous and repulsive deformities of the face. It places the subject at a great disadvantage, as it gives him the appearance of being pugnacious, disagreeable and uncompanionable; even though possessing a lovable nature, he seems to be sordid, morose and vicious.

Irregular teeth, or abnormal conditions of the bones of the face in the beginning, retard normal development and have their influence on all contiguous parts. To illustrate: Throw a rock into a pond: it will make a large circle of waves—at first large waves, gradually becoming small, but not until the effect has traveled some distance. So it is with the beginning of abnormal conditions of the teeth and bones of the face. Then the better time to correct is in the beginning of trouble.

The brain of the average child weighs at birth 371 grammes, at six years of age that brain weighs 1,360 grammes, and at nineteen years of age that same brain weighs 1,400 grammes; that is to say, in the first six years after birth a child's brain grows 989 grammes, and in the next thirteen years it grows only 40 grammes. In other words, the brain of a child grows over twenty-four times as fast in the first six years after birth, as it does in the next thirteen years. Hence you can see the value

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\*Read before the Tennessee State Dental Society, 1918.



of early treatment of irregular teeth, bones of the face and other abnormal conditions of tissues of oral cavity and face, for this is the psychological moment.

What is the most valuable time to treat orthodontic cases? The adenoids should aid in helping solve this question. This condition is found in children between the ages of one and twelve. The exact cause is not known, but sufficient to say here, causes abnormal respiration, and in this way is a grave cause of irregularities of teeth and bones of the face. In view of the fact, which is established by good authority, that adenoids occur in childhood between the ages of one and twelve, likewise frequently associated with diseased tonsils, which as another cause of malformation of teeth and bones of face, you can see why we establish childhood, or approximately stated, between the ages of five and fourteen. If tonsils are diseased and adenoids present, remove both and continue orthodontic treatment. This being the age when the tissues are more or less plastic, they are more amenable to treatment.

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### CARE OF THE TEETH DURING PREGNANCY

BY SYLVESTER J. GOODMAN, PH.G., M.C., F.A.C.S., COLUMBUS, OHIO

The teeth should be looked after at the very beginning of pregnancy, if it was not done when conception was anticipated. If there be need of it the teeth should be put in good condition. Waller's experience has led him to believe that if the removal of dental disease is adequately carried out, even after it has produced symptoms, improvement in the woman's health is sufficiently rapid and substantial to be of signal benefit to her child.

The insane fear that some dentists have of cleaning and repairing the teeth of pregnant women would be amusing if it did not cause so many women to neglect their teeth at this most inopportune time. I have repeatedly sent women to the dentist, hoping to get their teeth in the best possible condition, only to have the dentist tell them that he was afraid of causing a miscarriage by treating their teeth.

There is no more danger from treating the teeth of a pregnant woman, for ordinary defects, than there is from manicuring her nails, and it is a lot more important.

## SOME FACTS AND FALLACIES CONCERNING MASTICATION

BY GEORGE M. NILES, P.D.G., M.D., ATLANTA, GA.

THE CHEWING OF OUR FOOD is a subject of more or less interest to all. Beginning as a precept inculcated in every nursery, we constantly are admonished throughout life that thorough mastication is a prerequisite to health; while a rather recent school of thought contends that the whole process of bodily nutrition is markedly affected by the preliminary treatment of food in the mouth.

Mastication is an entirely voluntary act, while the performance of swallowing is a complicated reflex movement, which may be initiated voluntarily, but is, for the most part, completed independently of the will. Under normal conditions the presence of moist food upon the tongue seems essential to the completion of this act, and I might add, that a pleasant taste, coupled with a favorable mental attitude, still further facilitates the passage of food down the esophagus.

Too rapid eating, or tachyphagia, is a frequent fault, and has no doubt caused many digestive qualms, besides being the starting point of many chronic disorders of the alimentary tract. This I admit at the outset of this study. What I do *not* admit, however, is the necessity for slow, deliberate and systematic mastication as a *sine qua non* for health in every individual, irrespective of temperament or station in life; nor do I believe it conducive to the best work of the digestive organs that a hard and fast rule be enjoined, whereby a certain stated period must be devoted to the mastication of a meal, regardless of the pleasure of the masticator.

From time to time apostles of deliberate mastication, or bradyphagia, have appeared upon the horizon, the most prominent of these being Mr. Horace Fletcher, whose work, "The A B C of Our Nutrition," is so largely devoted to this topic, and who so well pleads its cause, that slow eating has come to be called "Fletcherism;" and to chew and insalivate food until it liquefies in the mouth is to "Fletcherize" it, according to that nomenclature.

Mr. Fletcher was an American gentleman, who, when middle-aged, obese, dyspeptic and discouraged, discovered that by slow and deliberate eating his health improved, and he began to elaborate this supposed new principle. Claiming that he literally chewed himself back into health, he also argued that by the extreme mastication and insalivation of food,

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NOTE—The author desires us to state that while this article has been written for THE DENTAL SUMMARY it is similar to one of his printed in the *Journal A. M. A.*, a year or so ago.—EDITOR.



appetite is satisfied with a much smaller amount than ordinarily is craved, while at the same time bodily and mental well-being is greatly enhanced.

Mr. Fletcher was really anticipated by Mr. Gladstone, who, as the first advocate of this fad in England, attributed much of his success in public life to the fact that he always had made it a rule to give every tooth a chance, counting thirty-two bites for each morsel.

Under Mr. Fletcher's skilled exploitation, mastication as an art has grown and budded and blossomed, until it has become a new theory, so popular that any one seeking to impede its continued fruition is considered by many either an iconoclast or an ass.

As regards the protein constituents of food, insalivation exerts but little effect. We well know that either the pepsin and hydrochloric acid in the stomach or the trypsin beyond will attend to them, if they are decently comminuted, and their stay in the mouth need be only long enough to originate those psychic impulses which Pavlov has shown us regulate the subsequent flow of digestive juices.

Carnivorous animals and reptiles habitually bolt their food, and zoological history furnishes no record of any psychic forms of dyspepsia in these creatures.

The essence of salivary digestion is the transformation of starch into sugar by the action of the ptyalin, and that process, though inaugurated in the mouth, continues until the whole of the stomach contents have become acid. The time of salivary digestion is brief, and to be effectual should be energetic. No more should be expected of it than a preliminary act. The pancreatic and other juices beyond the stomach will care for the starches, if only the psychic centers forward the tidings as received by the gustatory senses.

As to the method of comparative rapidity of chewing, I might say, and say correctly, it is to a great extent temperamental. As some people can perform a stated task, and perform it well, in half the time required by slow-moving individuals; and as some people move quickly, speak quickly and think quickly, so these same ones chew quickly, but well. By those ardent and strenuous spirits, who are happiest when in the busy turmoil of competitive struggle, the act of mastication is naturally performed briskly, but none the less adequately. To that other class, who desire to meander through life in a leisurely way, "Far from the madding crowd's ignoble strife;" to those semi-valetudinarians, whose gastronomic powers are under constant mental scrutiny, "Fletcherism" comes as a Star in the East, as a "wireless" from Ponce de Leon, heralding the successful issue of his quest for the fountain of youth.

Another objection to interminable mastication is the brevity of life. In one place Mr. Fletcher relates that one-fifth of an ounce of young onion required seven hundred and twenty-two chews before it disappeared through involuntary swallowing, and Dr. Kellogg mentions a

patient who cheerfully spent never less than an hour and a half in masticating his one daily meal.

To insist that busy men, those whose shoulders and minds bear the burdens and cares of government, commerce or literature; whose eager intellects are conquering the earth, the sea and the air—to insist that these should be subjected to a wearisome mastication of inanimate food, is a delusion and a snare, an anachronism upon our twentieth-century civilization, and a frittering of priceless time.

A short while ago there consulted me a cadaverous-looking dyspeptic, who informed me that, up to his retirement from active business five years ago, he never had experienced a digestive discomfort. During his laborious years he ate breakfast hurriedly, so as to get to the store betimes. His lunch was snatched at a nearby restaurant, while his evening meal was frequently rushed by some important engagement. The finer details of mastication never entered his head, nor did he realize that he was "digging his grave with his teeth" until so informed by an over-zealous friend acquired in his new life of leisure. The small seed, once sown, took root in his idle mind, and, with little else to do, he devoted himself assiduously to "Fletcherizing" his food and safeguarding his health. The result of this was a morbid introspection, which transformed a robust, alert business man into a puny, whining invalid, full of pains and obsessions, and with every waking thought short-circuited on his stomach.

That this is not an uncommon case, any observant physician will testify.

The students of digestion and nutrition, guided by the beacon lights planted by Pavlov and Cannon, are each year according more and more potency to the *psychic factors* involved in every function of those organs, and benighted indeed is the intellect that can comprehend only the mechanic and chemic aspects of these all-important questions.

When an appetizing meal is placed in an attractive manner before a hungry diner, both the eyes and the olfactories set in motion the preliminaries to the digestion of that meal. As each mouthful is received by the waiting gustatory tract, it is chewed and insalivated just enough to promote easy deglutition, and to allow its savory taste and aroma to be thoroughly appreciated. In the meanwhile numerous messages are being sent to the stomach, pancreas and other organs concerned, informing them in language perfectly intelligible how much and what kind of aliment is being sent them to digest. Should the messages be of cheerful import, these organs set to their tasks with alacrity, performing them with such ease and dispatch, that the fortunate owner need not know that he even owns a stomach.

On the other hand, should the same meal be taken with severe gastronomic contemplation, and with arduous and lengthy mastication, the messages may be flashed to the same waiting organs, "Your master



has lost confidence in you; the mouth and teeth will take over the most of your former duties, and hereafter you will be under constant mental surveillance." It is easily understood that under such conditions digestion is performed in a halting, complaining and unsatisfactory manner, and well may we say "The last state of that man was worse than the first."

A certain amount of necessary chewing is advisable, as evidenced by the conformation of the human teeth. Where the chemic functions of the stomach are deficient, or where the outlet is greatly constricted, fine mastication and thorough insalivation is indicated, and is highly beneficial. "Fletcherism" is also allowable in those lackadaisical creatures whose tastes are gently Epicurean, and who possess the desires of a Lucullus, minus the initiative. Let these harmless souls chew to their heart's content, for they need some fad, and this one can harm no one unless it be themselves.

To the great majority of everyday Americans, a simple injunction as to good teeth and ample mastication is entirely sufficient. But to those ardent beings, who move impetuously through the drama of life, whose every act is intense and every movement like a flash, to these "Fletcherism" is a blight and a pall, causing them to worry and chafe like a spirited horse held back by a cruel bit.

Each division of the alimentary tract has its rightful duties in the life-scheme of nutrition, and the magnification of any one is liable to prove an opening wedge for various digestive ills, that, like jealousy, furnish the food they feed and grow upon.

As we cannot by thought add one cubit to our stature, so let me close by the paraphrase, "No man can by taking thought add energy to his stomach."

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### Casting in Cold Molds

Perfect castings are made only in molds that have been permitted to cool to room temperature—the so-called "cold mold." A mold that is too hot to be borne comfortably on the back of the hand is a distorted mold, and a distorted inlay is the result of casting in such a mold. The hotter the mold the more distortion is present. After the wax has been dissipated and the mold cooled the casting may be done any time.

—R. H. Volland, *Journal, N. D. A.*

## THE INFLUENCE OF CHLOROFORM ON THE STABILITY OF THE RED BLOOD CORPUSCLES\*

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WOOLRIDGE, by a chemical analysis of the composition of the red blood corpuscles, determined that about 30 per cent. of the dry remnants of the stroma consists of so-called lypoid substances, chiefly lecithin and cholesterin. These findings were subsequently corroborated by Pascucci and others. Since both, lecithin and cholesterin, are to a very considerable extent soluble in chloroform, the chemical composition of the red blood corpuscles alone admits of the supposition that chloroform anesthesia is capable of influencing their stability in some way or other.

This supposition is corroborated by the fact that chloroform *in vitro* possesses the qualities of a strong hemolytic poison, causing diffusion of the coloring substances (Bottcher, Hermann and others). This is likewise supported by the investigations of Pohl, who determined that the greatest part of chloroform in the blood circulation in chloroform anesthesia is retained by the red blood corpuscles; the latter, according to this author, being capable of retaining approximately four times more chloroform than plasma.

It is necessary, however, to take into consideration that during anesthesia the amount of chloroform in the blood is relatively small, being, according to Pohl, about 0.035 per cent. of the entire amount of blood; and that chloroform is very quickly excreted from the organism. There are reasons to believe that within thirty to fifty minutes after anesthesia, a considerable part of the chloroform has left the body, chiefly through the lungs and somewhat less through the skin and kidneys (Lallemand, Duroy, Perrin, Fubini and Pohl).

The question as to the nature of the union between chloroform and the lipoids of the blood corpuscles still remains open. The union is apparently not a stable one, as the absorbed chloroform easily separates when a layer of air is passed through the mass of blood. We must admit that in all probability we deal here with a simple process of absorption. It is apparent that the great importance of chloroform anesthesia in modern clinical surgery, together with the investigations of its influence upon the other organs and tissues, attracted the attention of investigators to its influence on the blood, as chloroform penetrates it first and

\*Researches from the Therapeutic Clinic of Prof. B. P. Obraschov, of the St. Vladimir University, Kiev, Russia.

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by its aid is distributed to all other parts of the organism, particularly to the central nervous system.

We will limit ourselves to a very brief review of the investigations so far made for determining the influence of chloroform upon the stability of the red blood corpuscles. All these investigations have been of a laboratory character up to the present time. The method consisted chiefly of taking a specimen of blood from an animal and passing through it a mixture of chloroform vapor and various quantities of air. We have already mentioned that Bottcher and later Hermann have used this method for the purpose of determining the hemolytic properties of chloroform. It is conclusively proven that the diffusion of the coloring matter results from the injury to the lipid components of the red corpuscles. Some of these proofs were given by Pariscot and Heully. *They proved that the time during which chloroform vapor is passed through the blood is a greater factor in the degree of hemolysis: the process of hemolysis being by far more extensive if even very small quantities of vapor are used for a longer time, than large quantities for a shorter period.* According to some authors the hemolytic properties of ether are very much weaker than those of chloroform.

All the investigations along this line show a certain onesidedness; in determining the influence of chloroform upon the stability of the red blood corpuscles, the standard of comparison was exclusively a hypotonic solution of sodium chlorid. But, according to our present knowledge, the osmotic stability can under no circumstances be considered as a full reflection of all those defensive powers which the red blood corpuscles exhibit when acted upon by various hemolytic agents. The methods or processes by which various hemotoxins injure the red blood corpuscles are far from being identical. This is due to the highly complex physico-chemical composition of the red blood corpuscles on one side, and to chemical and physical differences of various kinds of blood poisons on the other.

The hemolytic action of the anisotropic solution of sodium chlorid is based upon the destruction of the osmotic equilibrium within and without the red blood corpuscle, i.e., the solution of the hemo lobin is due to a purely physical force. But in hemolysis caused by chloroform and other substances by destruction of the lipid substances of the red blood corpuscle, the chemical and physical processes differ entirely from those observed in the case of a simple destruction of osmotic equilibrium.

Evidently of the greatest interest is the answer to the question: How does chloroform affect those qualities of the red cells which are inherent to the corpuscles because of their lipid substances? This interest is still greater because the group of hemotoxins, the mechanism of whose activities depends upon the action of the lipid substances, is very large and variegated; to this group belongs, besides chloroform, ether, acetone and fatty acids, also a long list of hemolytic poisons of vegetable origin,

such as glucosides, saponins, sapotoxins, digitoxins, toxoalbumins, ricin, croton and others. To this same group of lipoid hemotoxins may be added some bacterial toxins: strepto- and staphylolysin and tetanolysin.

The solution of this question can be reached by determining how the stability of the corpuscles is modified toward hemolysins by chloroform anesthesia. For this purpose we determined in our investigations the stability of the corpuscles towards hemolysins before and after anesthesia. Since we were investigating only chloroform anesthesia, we primarily directed our attention to chloroform. It was natural to presuppose that chloroform could more distinctly render the antichloroforming stability. As an additional investigation we also, in each case, determined the stability of the red blood corpuscles toward hypotonic solutions of sodium chlorid. It is plain that such a method of investigation affords an opportunity of observing also such results of the narcotic action, which, when determining only the antiosmotic stability, remained unnoticed. This particularly refers to the conditions of clinical chloroform anesthesia. In experimental chloroform anesthesia, either *in vivo* or *in vitro*, augmenting the action of chloroform, one can, of course, reach those degrees of injury to the lipoid substances of the red blood corpuscles, which show themselves by determining the osmotic resistance. But clinical anesthesia, for very evident reasons, is always limited as to the amount of chloroform. Thus, we figured to disclose by the aid of the above-mentioned method, those modifications of the red blood corpuscles, which are caused by chloroform through the process of ordinary clinical chloroform anesthesia.

Blood for investigating purposes was taken by the aid of a syringe from one of the veins of the bend of the elbow. This was done at least twice: once during the day of operation, one to three hours before the beginning of anesthesia, and once thirty to fifty minutes after the termination of anesthesia. Since the technical details of determining the antiosmotic and antisaponic stability were described by us in one of our previous monographs, we will here limit ourselves to only a few explanatory remarks.

The antiosmotic stability of the red corpuscles was determined as follows: In a series of centrifugal test tubes (narrowed at the bottom), containing solutions of a gradually lowered strength of sodium chlorid, there was dropped fresh blood from the vein (two drops in each test tube). The difference of the strength of sodium chlorid solution in the adjacent test tubes was 0.03 per cent. The tubes were carefully shaken till the contents were of a uniform consistency. The measurement of antiosmotic stability was that strength of hypotonic solution in which after a definite period of time hemolysis took place. For the purpose of determining the antisaponin stability we used a series of similar test tubes of an increasing strength of a saponin solution (Saponinum albissimum—*Merck*) in 0.6 per cent. salt solution. The degree of solution of saponin



was exactly established. For each cycle of observations upon the same patient, we used the same saponin solutions. Since both determinations were made the same day, we were fully insured that the glucoside solutions did not lose any of their hemolytic qualities. The antisaponin stability of the red blood corpuscles was measured by the degrees of strength of the corresponding saponin solution. Exactly the same principal is at the bottom of determining the antiacetone stability. The antichloroform stability we defined by the following method: We started with a saturated solution of chloroform in a 0.6 per cent. solution of sodium chlorid. In each subsequent test tube there were two more drops of chloroform. Because of the possible evaporation of chloroform as well as acetone, the solutions were made in an exactly constant and similar order previous to getting the blood from the vein. As a measurement of antichloroform stability of the red blood corpuscles we used the strength of chloroform of that test tube in which there was complete hemolysis. The test tubes with the added blood were always kept for four hours at room temperature. For the purpose of pouring the solutions we used droppers, which insured the uniformity of the drops. The same kind of droppers were used for various solutions. The droppers, immediately after use, were thoroughly washed with water, alcohol and ether and dried by the aid of air. Likewise the test tubes were always used dry. Our observations were performed upon the material of the surgical clinic, both ambulatory and hospital. In a series of eighteen cases of major surgery, in patients between the ages of thirteen to sixty-seven years, lasting from twenty-five minutes to two hours and five minutes, it was noticed that in the majority of cases, chloroform, in a total dosage of from 8 to 52 gms., lowered, in a more or less constant degree the antichloroform stability of the red blood corpuscles, although a few cases showed no appreciable effect. It is difficult to form a definite relation between the amount of chloroform used during the operation and the degree of lowered antichloroform stability of the corpuscles. Evidently the minimum and maximum stability are to a certain extent independent, as in some cases one or the other stabilities was lowered, or when both decreased one was more affected than the other. Generally speaking a noticeable lowering of the maximum and minimum antichloroform stabilities followed the use of larger amounts of chloroform, or repetition of anesthesia for a secondary operation, associated with emaciation and poor condition of the patient. Individual peculiarities of the antichloroform stability may also have some relation to the amount and distribution of the lipoids of the corpuscles and the serum.

Chloroform anesthesia does not seem to have any noticeable influence on the antiosmosis stability of the red blood corpuscles. Out of eighteen cases observed, the antiosmosis stability was not changed in sixteen. The antisaponin and antiacetone stabilities remain the same in most

cases, although occasional lowering is noted both as to the maximum and minimum.

To determine the actual influence of chloroform anesthesia as the factor in changing stabilities, the stability of red blood corpuscles were also determined under local anesthesia. In four cases the method of determination was that already explained. In other cases the stability of the red cells, previously washed in a 0.6 per cent. solution of sodium chlorid, three times within one hour and centrifuged and then made into a 33 per cent. solution (by weight) in 0.6 solution of sodium chlorid, six drops to each test tube, was thus determined.

In none of the cases operated on under local anesthesia was any lowering of the stabilities noticeable, either for the whole blood or the washed cells. These investigations corroborate the view that chloroform anesthesia itself, and not the operative procedure, directly effects the stabilities of the red blood corpuscles.

In the researches as conducted a certain amount of chloroform remained in the blood system forty to fifty minutes after operation when the tests were made. The question, therefore, arose: "Whether this insignificant addition to the strength of the chloroform solution in the test tubes accounted for the results obtained?" To solve this problem the red blood corpuscles were washed in a 0.5 per cent. solution of sodium chlorid before as well as after operation. The washing was done by centrifuge for a period of one hour and fresh saline solution was added four times. A 33 per cent. solution of washed cells was made with a 0.6 per cent. saline solution and six drops used for each test tube. It was found that the antichloroform stability of the corpuscles was lowered even when washed, proving conclusively that the lipoid substances of the corpuscles are actually injured by the chloroform and that the insignificant amount remaining in the blood was not the determining factor.

The next question to be solved was: "How long does the lowered stability of the corpuscles last and to what extent can the stability be restored?" Our researches indicate that the antichloroform, anti-acetone and antiosmosis stabilities of the red blood corpuscles remain unchanged in the same case for a period of twenty-four hours, provided, of course, that during this period nothing further occurred that would tend to lower these stabilities. This observation also holds good for secondary operations.

The first stability to be restored is the minimum. This occurs in from sixteen to eighteen hours; in twenty-four to twenty-six hours the maximum stability is also restored.

In concluding the results of our work we will cite observations on the influence of chloroform anesthesia on the stability of red blood corpuscles *in vitro*.

Four cc. of freshly obtained blood was poured in each of two test tubes (A and B). The corpuscles were washed for an hour by the aid



of an electric centrifuge and salt solution was added three times. After the third addition of salt solution, it was decanted and into the test tube A, 5 to 6 cc. of the same salt solution was added, and into the test tube B was added a similar amount of the same salt solution containing a saturated solution of chloroform.

We discovered that such addition of chloroform did not cause hemolysis. In order to find out whether the red blood corpuscles actually remain unchanged as to the antichloroform stability or not, the following experiment was performed:

Both test tubes with their contents (A, salt solution and B, chloroform solution) were corked with cotton and put in the incubator for one hour at a temperature of 38 degrees Centigrade. Then the contents of the test tubes were centrifuged, decanted and the corpuscles washed for one hour with salt solution added to each test tube three times. From the washed red corpuscles of each tube, we made 33 per cent. solutions (by weight) in a 6 per cent. solution of sodium chlorid and added 6 drops to each tube (these drops were taken from test tubes A and B).

The results of these investigations of the chloroform action upon the corpuscles approximate very much the results obtained under clinical circumstances.

#### CONCLUSIONS

We briefly repeat the results of our investigations: Chloroform anesthesia lowers the stability of the red blood corpuscles; the anti-saponin and antiacetone stabilities are not so often affected, and, finally, the antiosmosis stability after chloroform anesthesia is rarely comparatively lowered.

Also, our investigations corroborate the specificity of the different methods of hemolysis. Chloroform, injuring the lipid substances of the red elements of the blood, must, of course, show its destructive action much more so when these substances of the blood had already been acted upon by previous narcosis. But the lipoids are acted upon, although in a different manner, by other substances, such as saponin and acetone; the first enters with cholesterin and lecithin into a permanent chemical union; and acetone, in solutions that cause hemolysis, besides its action upon the lipoids causes coagulation of the albuminous bodies.—(*Koppe*).

At any rate, the process of chloroform anesthesia, causing a more or less noticeable destruction of the lipid substances of the red blood corpuscles, may cause a lowered stability also with regard to these hemotoxins. The mechanism of the hemolytic action of hypotonic salt solutions, however, is not connected with the state of the lipid substances of the corpuscles; this is why injury to the lipoids caused by chloroform anesthesia seldom lowers the antiosmosis stability.

In conclusion, we wish to offer our thanks to Prof. H. M. Volkovitch for his kind permission to use the material from his clinic, and also to all those connected with the surgical clinic for their friendly co-operation during the performance of these experiments.

## ORAL FOCAL INFECTION, WITH SPECIAL REFERENCE TO CHRONIC APICAL FOCI AND THEIR RADICAL REMOVAL

BY EARL BROOKS, D D.S., NOBLESVILLE, IND.

A FOCUS OF INFECTION is a clearly-defined area of pathological tissue, infested with pathogenic bacteria. These bacteria and their toxins are absorbed in various manners and transported to a distant location, where a secondary lesion or metastasis is established. This secondary lesion may be the direct result of a primary focus, then in turn it may become primary to another and so on *ad infinitum*.

The means of communication from a primary focus, to the secondary lesion is *first*, by actual contact of closely-related tissue; *second*, by hematogenous infection, which is through and by means of the blood channels; *third*, by the lymph channels to the lymph nodes and thence to the blood stream, hence this latter method resolves itself into hematogenous infection.

Oral foci of infection, as far as the average dentist is interested in, are located either at the root ends of the teeth or the gingival areas, and the tissues adjacent to these two areas; this last named area would include the alveolar process and adjoining tissues and the maxillary sinuses. In a general sense, a focus of infection may be located almost any place in the body, from the head to the feet; however by far the greater number of primary foci are in the head. Of this area the teeth and contiguous tissues are clinically proving to be the most frequent source of primary foci. Even the tonsils have given way in favor of the teeth as being first in importance as relates to foci of infection.

The etiology of the root end focus, or that in which we are interested for this discussion, the chronic alveolar abscess is best understood by a study, histopathologically of the so-called root end granulum, which is the end result of the alveolar abscess. The term granulum or granuloma as it is commonly spoken of today, probably is not good terminology but probably should be termed in various descriptive adjectives relating to tumors, but in the present resume the writer shall adhere to former terms, pending the standardization of terminology for these lesions. In passing we might note that the acute abscess is to be considered a focus of infection; however it is a destructive process, and its products rapidly diffuse through the adjacent tissues; while the chronic abscess is constructive and its products are slowly absorbed. Most acute abscesses, if left untreated, terminate in chronic abscesses, but,



all chronic ones are not preceded by acute conditions, on account of the low virulency of the invading organisms.

The steps in the formation of the chronic abscess follow each other in a very definite manner. *First*, we must have an irritation; this usually starts from the methane gases from the decomposing pulp of the root canal through the apical foramen. The initial irritation however, can arise from either mechanical, chemical or bacteriological irritants, namely perforated canals, protruding broaches from the apical foramen, destructive or cauterant medicaments, cavities perforating the bifurcation or trifurcation of the roots, etc. Following the irritation, from whatever may be its cause is inflammation, accompanied by dilatation of the arterioles. The inflammation to this point is active and there are no exudates. Bacteria next enter the field, usually from the pulp canal, but may arrive hematogenously, thereby being a metastasis from a focus located elsewhere in the body. This is the doubtful or uncontrollable element, in otherwise perfect root-canal work, if such can be accomplished. The toxins thrown off by these bacteria make anti-toxins necessary; nature provides for this by a focal accumulation of endothelial, polymorphonuclear leukocytes which furnishes the anti-toxins. Mechanically they create a pressure which causes necrosis of the peridental membrane, by the activity of the cementoblasts and that of the osseous tissue by the osteoclasts.

The fibroblastic cells next become active from suffering cells or by the formation of fibrin in the thrombosis of the peridental blood vessels as well as of those in the osseous tissue. The organized fibrin thus resolves itself into vascular connective tissue; thereby forming a membrane surrounding the root apex, and attached not only to the peridental membrane but also into the trabeculæ of the osseous crypt. During the early part of this formation the attachment to the peridental tissue usually is stronger, owing to the greater number of fibers, than to the osseous crypt. When the tooth is extracted at this stage, this capsular membrane remains attached to the root end; but as the capsular wall thickens and attaches farther crownward the apical portion of the peridental membrane atrophies, thus weakening the capsular attachment to the tooth, which is now limited to a narrow band at the junction of the healthy peridental tissue and the denuded apex for the length of the circumference of the tooth. At this stage the capsular attachment to the crypt is stronger than to the root and when such tooth is extracted the granulum, except in rare instances remains in it osseous crypts.

Granulations consisting of plasma cells form within this connective tissue capsule to such an extent that usually only a small lumen exists. Capillary blood vessels are formed along with the fibroblasts and cyto-blasts. While the granulum seldom gets larger than a pea, yet it may grow to be quite large, due to the activity of the fibroblasts causing

pressure atrophy of the osseous tissue through the office of the osteoclasts.

The technic of preparation of a granulum for histopathological examination is very exacting and lengthy and will not be discussed in this paper. The fixer of selection will depend on the end results desired. If the specimen is being prepared to show the blood or plasma cells the fixer of choice is Helley's fluid; but if to show bacteria or connective tissue, Zenker's fluid should be used. The staining of the fixed tissue also will depend on what is wanted to be shown. Connective tissue is well stained with Mallory's phosphotungstic-acid, hematoxylin stain. Either blood or plasma cells stain well with either alkaline-methylene blue or eosin-methylene blue. Staining for bacteria in tissue is accomplished by the anilin dyes, the preferable being the Gram-Weigert, which uses anilin-methyl-violet.

The secondary effects of foci of infection are affected to a great degree by various conditions, such as the natural defenses of the body, the virulence of the invading organisms, the elective affinity of the organisms, the kind or variety of bacteria and the bacterial toxins. Each of these subjects would require a lengthy paper to do it justice and only the high spots will be touched upon.

#### THE NATURAL DEFENSES OF THE BODY

Immunology teaches us that our body tissues contain antitoxic powers. The white blood cells or phagocytes are our soldiers of defense, and well do they fight their battles. When the tissue is invaded by bacteria the white cells are stimulated by positive chemotaxis, which may be defined as the attraction exhibited by certain chemicals to the living cells. This leukocytosis results in exudates; liquid as in running ulcer or abscess and fibrinoplastic as in the granulum at the root end. The result of the steps so far is called a leukocytic phagocytosis, which may be further defined as follows: the white blood cells possess the power of destroying and absorbing the invading bacteria. This results in the formation of protective antibodies in both the blood and tissue. This process will be explained further under the subject of toxins.

#### THE VIRULENCY OF THE INVADING ORGANISMS

It is a well known bacteriological fact, that the same variety of bacteria may at different times and under different conditions possess different degrees of virulency. We all possess enough bacteria in our mouths at this moment to excite grave disturbances, if it were not for their low virulence, or mayhap as mentioned in the last paragraph, our body defenses. These low, virulent bacteria may, under proper conditions of food or oxygen become more virulent. For example, a streptococcic infection in a granuloma may be of such low virulence that it may not even be pus producing, but if deposited on the valves of the heart, through the blood stream and thus in a different oxygen tension,



it readily may become virulent and cause a valvular lesion. If it would be deposited in the renal glomerulus it could in such a favorable metabolism result in a more virulent type and nephritis would be the result.

#### ELECTIVE AFFINITY OF MICRO-ORGANISMS

It has been discovered that certain bacteria or various strains of bacteria have a special affinity for certain tissues. For example, if from an alveolar abscess as the focus, and the patient be suffering from a coleocystitis as a secondary lesion; now if a culture be made from both abscess and gall-bladder and injected into two rabbits, each animal will in most cases have a coleocystitis.

#### THE VARIETY OF BACTERIA

There is almost no end to the number and strains of bacteria that may figure in focal infections, yet the majority of cases are confined to a few varieties and their strains; they are staphylococci and streptococci, and of these only certain strains figure very often with reference to chronic oral foci, and will be the only ones discussed in this paper, however, while the other pathogenic varieties occur much less frequent, yet in that proportion they are equally as important.

The streptococcus is one of the most important pathogenic organisms that the human body has to contend with. It has such a wide range of virulence and so many strains that it very materially figures in so many of our diseases. It occurs in the form of chains with goodly numbers in most lesions. It is easily stained from cultures by alkaline-methylene blue, and in tissue by the Gram-Weigert method. The toxin from streptococcus is of considerable strength and usually causes much inflammation, yet it is quite capable of rapidly spreading and as a result it does not readily cause abscess formation. The toxins easily are absorbed by the blood; hence the organs of circulation and elimination are readily subjected to it and fall victim to its ravages. The brain cells particularly are susceptible to these toxins and cases of unsoundness of mind are directly traceable to such sources. The cocci themselves easily are absorbed, both by the circulation and lymphatics and in the inflammatory reaction there is usually an abundance polymorphonuclear leukocytes. This is a diagnostic symptom worthy of note in the blood count of patients suffering with streptococci focal infection, whether it be oral or otherwise. There are two main divisions of streptococci; the long chain group which are of high virulence and are very pathogenic and hemolytic. Fortunately they are seldom found in dental abscesses and if so, grave symptoms readily follow their dissemination; these are the variety that cause such diseases as erysipelas, follicular tonsillitis, fulminating septicæmia, etc.

The short chain streptococci very frequently are found in alveolar abscesses. They are nonhemolytic and of low virulence, when absorbed they may cause a low-character septicæmia and are the direct

cause of periarthrititis, arthritis, neuritis endocarditis, etc. The low-grade septicæmia may affect most all organs and tissues of the body, and subject them to ravages of bacteria that they would otherwise throw off. In this manner they probably are responsible for kidney and gall-bladder lesions.

Staphylococcus frequently is met with in dental abscesses; while it may be of low virulence in most chronic abscesses, yet it is capable of a high virulence and causes rapid reactions and is probably the one responsible for acute and subacute abscesses. It would certainly be a grave factor when present in an oral focus as it is responsible for rapid abscess formation, quinsy, middle-ear infections, mastoid, as well as other accessory sinus infections.

The absorption of toxins and their affects from oral sepsis is one of the problems of infectious foci that affords a rich field for research. True toxins only are formed by a few varieties of bacteria, such as Klebs Loeffler bacillus and tetanus; from these, killed cultures or their extracts will render the individual immune to their respective micro-organism. Streptococcus and staphylococcus and other inhabitants of oral foci do not form these true toxins, However they do form certain kinds of toxins which are readily absorbed and may produce a condition known as allergy. This may be either a favorable or an unfavorable allergy, depending upon the rapidity and amount of absorption of the toxin. A clinical case is where a man tolerated a blind abscess for several years; the virulency of the organisms suddenly rendered it subacute with rapid diffusion. The tooth was extracted, the abscess drained and curetted, after which the local symptoms subsided; the day following acute appendicitis occurred, and at midnight was operated for appendicectomy. In this case the appendix was sensitized to the protein of the low, virulent bacteria of this blind abscess through their toxins. When the virulency of the bacteria increased the subacute abscess appeared, the bacteria were absorbed and when they reached the appendix, it being sensitized to them, they produced a reaction which is known as antiphalaxis. This theory is made use of by physicians in the use of tuberculins for the diagnosis and treatment of tuberculosis. So sensitive is the individual harboring tubercular germs that the administration of extremely minute doses of tuberculin will produce a violent reaction. The sensitization of individuals by foreign protein in many instances is so well developed that very minute doses of the original product may cause antiphalaxis with grave symptoms. The sensitization against certain pollens is a good example of this. A case of golden rod sensitization that the writer once knew of is where violent sneezing and a severe attack of so-called "hay fever," began within five minutes after entering a room in which was sitting a vase of golden rod.

Oral focal infection may be responsible for a sensitization of most any organ or tissue of the human body, and become quite a factor in the



treatment of such, for their complete eradication will not only eradicate the micro-organisms but their toxins as well. Oral sepsis is certainly not desirable in even apparently healthy individuals while the acute reactions may be only slight, but in a person with reduced vitality and resistance its influence usually is quite marked. The complete eradication of an oral focus is imperative whether the patient is suffering with a secondary effect or not. Prevention is to be desired as well as cure. In the eradication of oral sepsis, too great an area should not be removed at one time for fear of antiphalactic shock as well as surgical shock. The extraction and a curettage of one or two abscessed teeth usually is sufficient for one sitting.

The diagnosis of oral foci located at the apical area is one of the most important subjects for our consideration, and is one of the most difficult parts of the whole practice of rendering the mouth free from being a focus of infection.

The microscopical examination of the mouth readily will reveal established fistulæ; this is unmistakable evidence of an abscess somewhere. A more careful examination will in many cases show the scar from a healed fistula, which is very suspicious indeed, but not conclusive evidence. The use of the faradic current readily will locate devital teeth, which are suspicious. Percussion is very valuable but not to be entirely relied upon. Radiodontia is the best asset we have in locating lesions at the root ends, but it is not to be wholly relied upon. Observation of both radiograph and operation on the lesion will soon convince one that the lesion in most cases is far greater in size than the radiograph indicates. The radiograph in certain cases shows no area of rarefaction when one really exists; the degree of radiolucency of the lesion being offset by like degree of radiopaqueness of the tissues in the ray path. So important is the use of the X-ray however in diagnosis that no treatments or operations should be attempted or conclusions arrived at without first resorting to it.

Reliable diagnostic information can be obtained by microscopic examination made directly from the exudate of the fistulæ or from the extreme apical portion of the root canal, and staining with either methylene-blue or Gram stain. Cultures can be made in either bullion or agar and cultivated for both examination and further tests on laboratory animals if the case warrants such diagnostic exactness. Another method of obtaining the culture is to dry the gum and paint with iodine, then make a flap by lifting the periosteum over the apex and with a small drill cut a hole through the cortical layer of the process, insert a sterile needle and aspirate from the area, from which cultivations can be made for examination and experiment.

The blood count has become to be an important asset in focal infection work, both as a means of diagnosis and as a check on the clinical

importance of an eradicated focus. A normal blood picture shows about five million red cells and nine thousand white cells in one cubic mm. of blood. This may vary and is influenced by many conditions foreign to focal infection. In our work we are not so much interested in the red count as in the white and any material rise in the white count demands an explanation.

There are five main kinds of white cells. There are lymphocytes both large and small, which make up about 22-25 per cent. of all white cells. The mononeuclear or transitional leukocytes, 1-3 per cent. of all white cells. The polymorphonuclear leukocytes the remainder of the white cells. There are three types of polymorphs; the neutrophilia which constitutes 70-72 per cent. of all white cells, the eosinophilia 2-4 per cent. and the basophilia  $\frac{1}{2}$  per cent. For ordinary purposes a differential count of the white cells are not made, yet a lymphoid picture usually indicates a bacillary infection which we seldom have in an oral focus and a coccal infection is pictured by a high leucoid count. The writer has noticed some importance being attached to a high count of both eosinophilia and basophilia in oral focal infection and has given considerable study and attention to this question, yet cannot find sufficient evidence to support the theory.

Further light in diagnosis may be obtained by an examination of the urine. A chemical examination would reveal the presence of albumen which would in itself show a pathological condition to exist in the renal tissue but would not reveal from whence came the infection. The presence of sugar in diabetes usually is associated and indirectly the cause of inflammatory conditions of the mucous membrane of the oral cavity, this being the effect rather than the cause of pathological condition and is not pertinent to focal infection. After centrifugalization of urine, microscopical examination might reveal the variety of pathogenic bacteria and by comparing the result with microscopic examination of the exudates or tissue of oral foci, proper inferences could be deducted.

While relatively important the urinary examination as a diagnostic procedure, yet the oral surgeon should not place more credence on its directness as related to oral foci than that of the examination of other organs or functions of the body. A general examination of the entire body as well as of the urine is more in the pale of the internists than the oral surgeon. This examination should make up a part of the history of any case of importance; the heart, the circulation, the appendix, joints, muscles, tonsils, blood pressure, thyroid, accessory sinuses, temperature, etc., etc., should be noted in arriving at a definite conclusion on a case.

The prognosis in eradicating a root-end foci is relative owing to whether conservative or radical treatment is employed. It is our duty to humanity, as dentists, to preserve the natural organs of mastication



as long as their preservation is more an asset than a liability to the individual. If we can be conservative and render the tooth and surrounding tissues free from being a focus of infection, then conservative treatment is *par excellence*. Two methods of conservative treatment are in vogue today; they are therapeutic medication and electrolytic medication, both of which I shall pass without discussion of their technic or relative merits as compared with semi-radical or radical treatment inasmuch as the intent of this resume only deals with the radical, but in passing let me state that the conservative methods are not to be relied upon if one desires definite and positive results.

The semi-radical treatment consists of the resection of the necrotic apex and the surgical removal of the pathological tissue. The technic of this operation was given by the writer in an illustrated clinic before the State Society, in 1917, and for that reason it shall not be dwelt on here. The radical method consists of the extraction of the offending teeth and the removal of all pathological tissues related thereto. The prognosis in the eradication of oral foci of apical origin is in the conservative method the poorest; the semi-radical method forbears semi-good prognosis, while with the radical treatment the prognosis is very favorable and the best of the three methods.

When once we have arrived at a diagnosis of the case and the various focal points located it should then be decided upon as to how many operations are necessary for their removal. Many conditions should be taken into consideration in arriving at this conclusion. First, the number of foci and the relation they bear to each other, the general condition of the patient, and the proper reconstruction of the masticating apparatus after operation, ever bearing in mind both the surgical and antiphalactic shock that the patient is subjected to. It is to be highly desired by both patient and operator to complete the work in as few operations as advisable considering the above conditions. When the pathologic tissue of one tooth blends into that of one or more adjoining teeth, the entire area so blended should be included in one operation, regardless of how many teeth are involved. The inclusion of another field at the same sitting must be left to the judgment of the operator, after taking all conditions into consideration, ever bearing in mind that too much rather than too little is to be avoided.

The method of anesthesia is again a matter of personal equation as well as the conditions surrounding the case. However the majority of cases are best performed under conductive or infiltration or their combination.

The *modes operandi* consists in first prophylaxis of the mouth in general, followed by a pressure spray with some efficient antiseptic such as Dakin's solution, thereby rendering the entire mouth as nearly as possible, for the time being aseptic. The instrumentarium, linens and dressings used during the operation should be sterilized in an autoclave

for at least fifteen minutes at fifteen pounds pressure, to be followed by a vacuum for several minutes. The gingivæ and gums of the operative area after being dried are painted with 3 per cent. iodine, while the lips or cheeks are held away by suitable retractors. At this point the tooth or teeth are ready for extraction providing it has been previously decided that the pathological tissues can be satisfactorily removed through the socket without its enlargement. This frequently can be done especially in the anterior teeth where the crypt is not too large or the root quite small and long. Otherwise in order to gain access to the apical area a portion of the outer plate or the septum between the bifurcated roots in multirooted teeth, must be removed in order to get sufficient access to the crypt. In cases of long or slender roots and with large granulomas and where only one or two teeth are involved it being deemed best not to resect too much process in order to gain access to the crypt, it is many times necessary to make a window over the apex for the removal of the granulum similar to a case of apicectomy, even though the tooth is extracted.

It has been deemed expedient to secure better access to the apical area by way of the removal of the outer plate, and by the use of a suitable lancet and periosteotome a labial or buccal flap, as the case may be, is made, beginning at the gingivæ and extending rootward as far as the case indicates and extending laterally to the extreme edges of the operative field. The teeth may be extracted at this time or may be postponed until after the heavy osseous alveolar border is removed by the use of chisels or burs if the case indicates better surgery in extraction. The hemorrhage should be removed by sponges in the hands of the assistant and at no time should the patient be allowed to expectorate or the saliva come in contact with the wound, if possible to prevent, thereby preventing the mouth flora to contaminate our otherwise sterile field. After removal of the teeth by forcep or elevator as the case indicates, the next step is the removal of sufficient outer plate by means of rongeurs, chisels and burs to afford ample access to the crypt. The removal of the granulum is the next step in the procedure. A variety of instrumentarium may be selected for this as best suits the individuality of the operator. However its removal should be with the least laceration possible to the outer capsular membrane. The selection of instruments should be made bearing this in mind. For this purpose in the writer's opinion, no better instruments can be selected for the average case than Black's special spoons, the selection of which will depend on the contour of the crypt. With reflector or headlight, and the latter being preferable in most cases, one has direct vision of the field. The instrument is inserted between the capsular membrane and the osseous crypt, peeling the membrane loose from the crypt. With the selection of instrument according to contour of crypt, one-half usually can be dissected away with one instrument, the other half by the corresponding opposite instrument. Assis-



tance and slight traction can be afforded with advantage in many cases by the use of lock pliers or small hemostatic forceps in the hands of the assistant, by which the granulum can be removed when dissected free from the crypt. The crypt should now be examined most carefully and curetted for any stray membrane or necrotic areas overlooked. The next step is to copiously irrigate the entire field with warm physiological salt solution. The labial or buccal flap is brought over and in continuity with the lingual gum, with the proper surgical *modus operandi* on both process and flap, so as to produce the best contour of ridge and suture line possible, and suturing with a glover's stitch of 00 chromatized gut. The packing of the crypts with gauze will have to be left to the judgment of the operator in each given case, however it should not be resorted to in the majority of ordinary cases but one should wholly rely upon the antiseptic action of the clot to take care of the wound. The patient should be seen daily until it is definitely determined that no infection is occurring and you will be agreeably surprised how few occur under this procedure.

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#### INITIAL REPORT OF THE ST. LOUIS STUDY CLUB\*

ORGANIZED, JANUARY, 1919

The following subjects were studied by the members of the club:  
Crown and Bridge Work,

Vital Tooth Attachments.

Cavity Preparation and Inlay on Vital Cuspid,

Three-quarter Cast Gold Crown.

Bridge with the Occlusal Rest.

Bridge with Porcelain Root.

Lingual Bar Partial Denture.

Instructors for this class were: Dr. Malcom Robb, Dr. E. R. Hart, Dr. Otto J. Fruth, Dr. J. D. White, Dr. L. G. Neuhoff.

Treatment and Filling of Root Canals as advocated by Doctors Howe, Callahan, and Coolidge. Dr. W. A. Chamberlain, Instructor.

Bacteriology. Practical laboratory course in examining, staining, etc., of the principal bacteria found in the mouth. Dr. C. Kelker, Instructor.

At the end of the term, a dinner in honor of the teachers was given by the students. The chairman of each class read a detailed report of the progress made, which was followed by a general discussion. These reports contain a concise description of the technic used in the class work and are considered of sufficient interest to the dental profession for publication.

The classes will take up the work again in September and continue further research work until June, 1920, when we expect to have more supplementary reports for publication.

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\*Read before the St. Louis Society of Dental Science.

## CHAIRMAN'S REPORT OF THE CROWN AND BRIDGE CLASS\*

BY DR. MAX FENDLER, ST. LOUIS, MO.

*"Study Clubs are the time-keepers of progress."*

I deem it a privilege to be associated with the Study Club as chairman. The Club stands for a league of progressive, studious men, the type of man that today is wedging and hewing his way into the very stone of undeveloped truths, ever seeking the fabric of reason, eager to know the facts and the manner with which to apply them; willing to lend an ear, voice and hand to the unravelling of the intricate problems which, as students, we see on the every-day horizon of professional endeavor.

Not through the keyhole of selfish competition walled off by the air of stagnation, but out into the larger room of light, co-operation and good-fellowship, you have cemented your foundation. A vital foundation, gentlemen, I am sure, that has all the castings of perpendicular lines, strength and a desire to "carry on" to the ultimate rearing of a structure monumental in its purpose.

You have not been tied to a harbor of close-minded content, with the hawsers of yesteryear rusting their usefulness upon the sands of inertia, but out upon the broad seas of open-minded initiative you have chosen your chart. Its study you have tabulated with benefit to yourself and surprise and delight to your instructors.

Study Clubs shake us loose from that feeling of security which we are lulled into by inaction, and lack of study. Constructive criticism, is but a stepping-stone to higher and more intelligent proceedings. Act in unison—grasp the rope of progress, it is dangling before us eagerly. Pull all together with a determination and a fixed purpose, with a heart strong and eyes forward to the light. Come along! By attrition go forward—wade in—rub shoulders—get a whack and a knock, it will have a tendency to straighten you up and show you the truth.

Our daily work does not carry with it the starry banner flung to the breeze, the sight of which urges men on to big self-sacrificing deeds. There is no sound of martial music to quicken the step when it becomes heavy with fatigue and sameness. No praise of the multitude to bring the head erect, the pulse and breast beating with a desire to DO—no gentlemen, it is not given for men in our calling to bask in the lime-light of public gaze. Our stage setting is made by our own hands; as we ourselves fashion it, so it remains. We do not do the things which call for public acclaim, but as ships that pass in the night, we go on and

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\*Report to the members of the St. Louis Society of Dental Science.



on with duty and true service as our cargo, and conscience alone as our captain.

It is good for us to foster and hold dear the spirit of idealism and sentiment. We should temper our work with true art, to reprint, if possible, nature's handiwork. This is not possible without the mirror of an idealist.

May I not say, the enthusiasm, loyalty and energy you have shown in attention to your task has been a keen enjoyment and incentive to your chairman, a real vital instrument in your hands pointing the way for immediate propaganda among the profession of our city.

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### PARTIAL DENTURE WITH LINGUAL BAR ATTACHMENT AND OCCLUSAL REST\*

BY DR. LOUIS G. NEUHOFF, ST. LOUIS, MO.

*Clinic Selected:* The Restoration of the Lower Right Second Bicuspid and First Molar.

*Technic:* The various parts of this denture consisted of a swaged saddle, cast lingual bar, clasp, two occlusal rests, re-enforcing rods, and lugs.

The first step in the construction of this denture was obtaining a die and counter-die of the edentulous space, upon which was swaged a saddle of 20k, No. 30-gauge gold. The saddle to lie apron-like over the gums but not encroaching upon moving tissue, and to slightly encircle the approximal teeth but not to be in contact with them. The edges and angles to be trimmed in graceful curves. The lingual and buccal margins to be slightly flaring, thus preventing the tissues from crowding over the edge. This should be pre-determined and provision made before making the die.

The next operation was constructing the lingual bar, which in this case was cast in two sections and soldered together. The metal of choice for this casting was either 10 per cent. platinum-gold or Ney-Oro Elastic. The pattern for the lingual bar was formed upon the original model with saddle in place. Three layers of No. 60 tinfoil was first burnished to the lingual surface of the incisors, and all gum portion embraced within the circumference of the intended lingual bar, which in this case extended from the saddle to the first bicuspid on the opposite side of the mouth. The approximal surface of the just mentioned bicuspid should be well defined by trimming the model before burnishing the foil. The object of the tinfoil was to provide a space between the lingual bar and the tissues to preclude any irritation. The surface of the tinfoil being oiled, the casting wax was fashioned to form the pattern for the lingual bar, which, should be oval in form and of about

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\*Report to the members of the St. Louis Society of Dental Science.

14 gauge in thickness and 3-16 of an inch in width. The wax overlapping the saddle about  $\frac{1}{4}$  inch and lying about  $\frac{3}{8}$  inch below the margin of the incisors. At the median line a dove-tail or lap joint was provided for, thus forming the joint for soldering the two sections together. This wax end being oiled, the waxing was continued until opposite the first bicuspid on the left side where the lingual bar is somewhat enlarged, and conforming to the lingual surface of the first bicuspid, encircling it distally into the approximal space, and also mesially with an additional extension over the mesioocclusal angle forming a lug or occlusal rest.

(At this stage of our studies our worthy clinician showed how wax could be made to flow up hill, how heat repelled wax and how cold attracted it. How heating the spatula handlewise of the point enables wax to be applied to a surface in form of a ribbon, a beated edge or in hemispheres.)

The clasp for the first bicuspid adjacent to the edentulous space was made of 24-gauge clasp gold and encircled the tooth a little more than half the circumference, also being contoured to fit the bulging portion of the tooth but not to come in contact with the saddle unless a short occlusal bite existed. The circular form of the clasp and contour is produced at one operation. Having cut the clasp from a pattern obtained, it is laid flat upon a block of lead, and with a ball-ended instrument placed upon the gold and driven down with hammer blows will tend to coil and contour it to approximately the desired shape which is further completed with pliers. (The knob of the handle of a dental instrument is mentioned as ideal for this.) The edges of the clasp are rounded and somewhat beveled toward the tooth. The clasp is attached to the saddle by an upright flattened wire of clasp metal which is bent at right angle over the edge of the clasp and forms an occlusal rest on the distoocclusal angle of the banded bicuspid tooth. The other end of the wire is also bent at right angle, where it is attached to the saddle. A similar occlusal rest is formed for the mesioocclusal angle of the second molar and likewise is soldered to the saddle at the nearest point. The occlusal rests were made of No. 14-gauge clasp wire.

All parts were next assembled upon the original model and waxed together to prevent liability of distortion upon removal therefrom; short sections of common wire were waxed crosswise from one section to the other. The banded bicuspid had to be fractured from the model to facilitate removal, which later on was cemented back. (The sticky wax was composed of three-fourths beeswax and one-fourth rosin.)

This was then invested in plaster and tenax, with no portion of the metal covered with the investment, as this was merely to serve as a soldering block for the parts to rest upon.

The first soldering is to attach the lingual bar together, next applying blowpipe where the bar joins the saddle, then follow by soldering the clasps and occlusal rests to saddle. The brush flame is played upon



the heavier portions first, bringing the blowpipe to a needle flame if the lighter and thinner parts are being overheated, or if the soldering is to be confined to a small area. 20k solder was used throughout.

The denture was now replaced on the original model and any distortions (which usually occur with gold dentures) were corrected.

The saddle was next wired with 24k, No. 18-gauge gold, and this was tacked with 20k solder at several places. Then the vulcanite side of the saddle and wire was coated with Spanish whiting and alcohol as an anti-flux. The denture then being turned upside down, the wired edges were completed with 18k gold solder.

A strengthening bar was soldered from the ridge of saddle diagonally across to where the saddle and lingual bar joined.

Various little lugs for vulcanite attachment were soldered to the surface of saddle.

It is desirable that this denture should fit the model so its removal is only accomplished by a slight tilting and unlocking motion.

The case was removed from the model for vulcanizing and completed the usual way.

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## BACTERIOLOGY\*

BY DR. L. R. MAIN, ST. LOUIS, MO.

In submitting to you a report of the work done in the study classes in "Bacteriology and Its Practical Application in the Office of the Every-Day Busy Dentist," I can scarcely do more than mention, in the time allowed, some of the interesting and instructive ways in which the knowledge thus gained will aid us in meeting the problems of daily practice more intelligently.

A better understanding of mouth infection is the point of mutual interest of the medical and dental professions.

A laboratory course, such as was presented to our study class, is of inestimable value. It contributes to a more thorough understanding and comprehension of primary oral lesions manifested by symptoms in remote parts. For example, in the case of a patient suffering from rheumatism and presenting also an oral infection, a microscopic study of a culture of pathogenic organisms may identify some organism or chain of organisms responsible for this arthritic disturbance.

When a growth of streptococci is obtained from a tooth or socket, we are in a position to suggest to the physician in positive terms the great necessity of ridding the mouth of these virulent organisms, because of their association with such systemic disturbances.

Since even in the mouths of apparently healthy individuals the various oral bacteria are ever present, I do not wish you to infer that where-

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\*Read before the St. Louis Society of Dental Science.

ever we find micro-organisms we necessarily find disease. However, where we find symptoms of disease we can often substantiate our suspicion by making cultures or by merely examining microscopically smears obtained from the mouth.

In doubtful root canals, that is canals in which the sterility is not certain, it is possible to aseptically remove some of the dentin along the walls or near the apex of the canal, make a culture, incubate, and endeavor to obtain a growth therefrom. If a growth is obtained it is certain that the canal is not thoroughly sterilized.

This sort of work also gives the dentist an opportunity to do some interesting experimenting along research lines in the treatment of dental lesions.

One might ask to what degree is such information of value to the dentist aside from broadening his mental horizon and enabling him to more intelligently consult with the medical man. To my mind it will give to the dentist who is mentally alert, an opportunity to treat dental lesions more scientifically. He can thus ascertain with what organism he is dealing and practice rational instead of empirical therapeutics, because of his knowledge of certain organisms and conditions that are favorable or unfavorable to their development.

By closely watching the results of certain drugs in a given case where the organisms are known and by comparing these results in similar cases, we are in a better position (with the use of the microscope) to make an intelligent prognosis to the patient.

To my mind such a course will prove beneficial to every practicing dentist who is not already familiar with this work.

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## REPORT ON THE HOWE METHOD OF TREATING ROOT CANALS WITH AMMONIATED SILVER NITRATE, AS GIVEN TO THE CLASS ON ROOT CANAL TECHNIC OF THE STUDY CLUB

BY DR. W. H. WELLS, ST. LOUIS, MO.

The use of ammoniated silver nitrate in the treatment of root canals is a method which not only sterilizes the canal and tooth structure but fixes those shreds of organic material which can not be removed by instrumentation. It is a method which Dr. Howe advocates to be used in all root canals. Those which are freshly devitalized and those which have become septic.

The solutions which Dr. Howe advocates are solution No. 1 and solution No. 2.

Solution No. 1 is made by adding to a saturated solution of silver nitrate, 28 per cent. ammonium hydroxid. The addition of the am-

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\*Read before the St. Louis Society of Dental Science.



monium hydroxid produces a dark precipitate, which continues to be thrown down until there is an excess of the ammonia; then the solution becomes clear. An excess of ammonia is undesirable, because of its irritating properties; so the solution should be left slightly cloudy. This undissolved silver oxid will settle and the clear solution is used.

Solution No. 2 consists of 25 per cent. formaldehyde.

Flow solution No. 1 into the root canal and allow it to remain three minutes; no pumping or forcing is required, as it has been proven that the solution will flow wherever it is required by means of capillary attraction, osmosis and the affinity the ammoniated silver nitrate has for albumin. The excess of No. 1 solution is removed by means of paper points and No. 2 solution flowed to place and allowed to remain three minutes.

The results of the use of these two solutions is to throw down minute particles of free silver, which impregnates the organic material in the canals and tooth structure and plugs the dentinal tubules.

By repeating the above application three times, minute collateral canals and foramina are sealed with free silver and the canals ready for any canal filling which the operator wants to use.

Discoloration is controlled by plugging the apical part of the canal with paper point, painting the rest of the canal and cavity surface with synthetic varnish, Caulk's cavity lining, or vaseline, after which the paper point is removed and the silver flowed to place.

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REPORT ON THE TECHNIC OF THE CALLAHAN AND  
COOLIDGE METHODS OF FILLING ROOT CANALS,  
AS GIVEN IN THE CLASS ON ROOT-CANAL  
TECHNIC OF THE STUDY CLUB\*

BY DR. R. G. SENDKE, ST. LOUIS, MO.

It is not my endeavor to add anything to what our able instructor, Dr. Chamberlain, to whom we all feel grateful for the trouble he has gone to, to help us solve the many trials of root-canal work, has given us in his lectures, but only to enumerate the various points which he laid down for us in the Callahan and Coolidge methods.

The Callahan Method in brief, is the use of  $H_2SO_4$  in the opening of the canals, and the use of rosin and chloroform as a cementing substance in which a gutta-percha cone is pumped back and forth in the canal until the solution of rosin, gutta percha and chloroform are forced into the tubulés and foramina, and a perfect sealing of those openings brought about.

Dr. Callahan's formula for the cementing solution, which is known by his name, calls for 2 oz. of violin rosin and 2 oz. of chloroform. To this may be added a small amount of thymoliodid or iodoform.

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\*Read before the St. Louis Society of Dental Science.

The Coolidge method requires that the root canal be opened sufficiently to admit a No. 1 Kerr plugger within two millimeters of the root end. Any root-canal cementing solution is worked into the apical end of the root canal. A No. 1 Kerr plugger carrying a piece of gutta-percha cone attached to its end, is then passed into the canal as far as it will go and the gutta-percha packed to place. It is easy to determine the amount of excess which will be forced through the root end by the fact that the plugger goes within two millimeters of the apex. Small pieces of gutta-percha cones are now packed into the canal until full.

The opening of root canals is the most difficult part of the operation. The canals which are encountered are those which are septic and which have previously received root-canal work; those which are septic but never have received root-canal work, and those in freshly-devitalized teeth. Access to the canals and leaving undisturbed the relation between the pulp chamber and canal is essential.

In opening, sterilizing and filling teeth in these three classes, about the same general method is employed. With septic canals which never have received canal work, some gaseous medicament is used, to suppress the aerobic bacteria, before any root-canal work is attempted. The best of these gaseous medicaments is a paste made by grinding up a chlorozene tablet with glycerin. This was first advocated by Dr. Ewing P. Brady. Formocresol may be used.

In teeth where there are septic canals with imperfect fillings, xylol is used to soften the gutta percha and aid in its removal. Xylol is preferable to chloroform because it is less volatile.

Sodium potassium is now used to aid in getting into the canals and in destroying the organic material. This is followed by 40 per cent. sulphuric acid, which neutralizes the alkali and helps to attack both mineral and organic material.

Bicarbonate of sodium is used to neutralize the sulphuric acid and by virtue of its effervescence, carry out the debris. Reaming and enlarging is now done alternately with sulphuric acid and bicarbonate of sodium until the canal is ready to fill.

The following are the steps advocated in the opening and the filling of the root canals.

1. Open pulp chamber.
2. Pass fine, smooth broach in canal.
3. X-ray.
4. Get accurate measurement in millimeters.
5. If picture is accurately taken, tooth in picture will be same size as natural tooth. If broach extends through root end corrections of measurement can be made. If above does not seem accurate, wire can be replaced and another picture taken.
6.  $\text{H}_2\text{SO}_4$ , 40 per cent. is now used; flow along smooth broach which is worked around in canal, with a circular motion.



7. No. 1 Kerr file, Kerr reamer or XXX fine 20th century barbed file is marked at the proper length and reaming is started. Each time it is twisted in and withdrawn it is wiped on sterile gauze. Canal is reamed with these until end is reached. In withdrawing during the reaming, the instrument is swept over margin of canal each time, which gradually enlarges the orifice, into a funnel shape. The debris is removed from the instrument by wiping it on a piece of sterile gauze, on which has been poured a little tincture of iodine. Cotton pliers or other such instruments, which have been contaminated quickly may be sterilized by dipping the instrument in tincture of iodine and burning off.

8. No. 2 Kerr file, reamer or XX fine 20th century file.

9. No. 3 Kerr file, reamer or X fine 20th century file.

10. No. 4 Kerr file, reamer or X fine 20th century file.

This is kept up until canal is large enough to fill.

11. Canal is now flooded with saturated solution of bicarbonate of soda, which neutralizes the  $H_2SO_4$  and removes the debris.

12. Dry canal with paper points.

13. Flow in acetone, dry with warm air.

14. Select sterile gutta-percha point which goes nearly to root end and leave in canal.

15. Flow rosin and chloroform in alongside of canal point, then grasp point with cotton pliers and with pumping motion gradually work into canal.

16. Force another gutta-percha point into canal and again pack with canal pluggers, using a large one to compress material in canal, then No. 1, to force gutta-percha against wall. This is continued until canal is packed.

17. Each canal is filled separately within 1 mm. of chamber floor. Canal is cut clean with bur and filled with oxychlorid of zinc.

18. This method only fills those canals which are dry and open, according to Callahan.

Text Books recommended are: Duke, *Oral Sepsis*; Raper, *Dental Radiography*.

### A BRIDGE\*

BY DR. E. R. HART, ST. LOUIS, MO.

In these enlightened days when as we all know, focal infection is playing such an important part in systemic disorders, it is not only proper that we, as dentists, should heed the sounded note of warning regarding devitalized teeth and their sequelæ, but necessary that we conserve in every possible case the pulps of these masticating organs.

Dentistry is advancing to the higher planes with such rapidity that one must keep pace with the newer order of things or be relegated to

\*Read before the St. Louis Society of Dental Science, being a report of the Technic of Construction as given to the St. Louis Study Club.

the back-number class; it is either progression or retrogression; we cannot stand still; and with due respect to the newer technic in root-canal work, the promiscuous destruction of pulps in teeth for bridge attachments, might well be considered a crime—hence our Study Club. Let me, at this point extend to those gentlemen who so kindly gave their time in imparting knowledge to us, the thanks of the class; I, for one, do appreciate and have benefited by their instruction.

While we have studied various attachments, (all on vital teeth) this report will cover but one style, and then go further and take up the construction of this particular type of bridge.

One of the essentials in all dental operations, is the radiograph. Especially is it so in this type of restoration as it gives us an outline of the pulp chambers in those teeth which we wish to utilize as abutments; assures us as to sufficient supporting process of abutment teeth; shows direction of roots of those teeth which we wish to replace, and conditions surrounding them. Coupled with the radiographic examination is a thorough study of the case; i. e., position and alignment of the teeth, forces of occlusion examination of soft tissue, and a planning of our work.

#### ABUTMENT PREPARATION

This preparation is for attachment known as the three-quarter crown, and is ideal in that it affords a maximum of strength with a minimum of tooth destruction (and pulp irritation) thereby assuring long life to the restoration.

Instruments and materials used are: Safe side discs, both flat and safe inside saucer-shape, mounted carborundum stones, small, knife edge, tapering fissure and straight, cross-cut fissure burs and gingival margin trimmers.

The initial cut is made on the mesial (with flat disc), cutting straight down from incisal or occlusal toward the gingival, and in a direct line from labial or buccal to lingual. This is carried gingivally as far as the particular case demands, and our first cut should give us sufficient extension on buccal or labial for self-cleansing margins and a very slight gingival shoulder. The second cut is made by a slight lingual rotation of the handpiece to carry our preparation onto the mesiolingual angle.

The preparation on distal is made in the same manner, using a safe inside saucer-shaped disc, cutting down through contact point and gaining sufficient clearance for an outward movement of handpiece to obtain our preparation on distolingual angle. The mesial and distal preparation should be parallel or slightly converging toward incisal or occlusal. With a tapering fissure stone the lingual surface is swept backward and forward to connect our mesial and distal preparations, and obtain the slight shoulder. This shoulder should be very slight—one-quarter to one-half millimeter—and I might say right here that its purpose is not



for seating our finished casting but merely furnishes a definite line for our margins.

In the anterior teeth, the lingual concavity is swept with small stones, removing any faults in the tooth surface and to allow for the slight thickness of our finished casting. Retention grooves are cut on mesial and distal, with small cross-cut fissure burs or stones, beginning at the proximo-incisal angle back of the labial enamel plate, and working gingivally until the shoulder is reached; next with a small knife-edge stone, the mesial and distal grooves are connected by a groove lingually to the incisal edge. (When the incisal edge has been involved by abrasion, attrition or filing, our preparation must be made accordingly.) This gives us a staple form from mesio gingival angle, across incisal or occlusal to disto gingival angle, and acts as a guide for seating our finished casting and prevents lingual displacement; this staple form being reinforced by that part of attachment covering lingual surface. In posterior teeth, the preparation is practically the same, except that sufficient enamel is removed from the lingual cusps to allow for the thickness of material in our attachment, and extending into the sulcus is finished to the buccal of our mesiodistal groove against a definite wall.

One point that must be constantly borne in mind is that all grooves in our abutment teeth must parallel each other.

#### WAXING AND CASTING

The direct-indirect method is used in this work, as it permits of a perfect view of all margins. Then too, you will find it much easier to carve your wax with the model in your fingers than when it is in a very inaccessible place in the patient's mouth. Nevertheless, a wax impression is made in the mouth by forcing the wax into place and holding with a silk strip while the patient bites on it and exercises lateral motion of the jaws. This gives us our occlusion and contact points.

Select a "Blue Island" band (long) that is slightly oversize for the tooth and with this about two-thirds of the way on the tooth, modeling compound is forced into it and band and compound pressed to place. Maintain pressure until compound can be chilled. It is then removed, invested in plaster, and packed with amalgam. In investing this impression, build the plaster around and beyond the edge of the band so that an excess of amalgam may be packed into it to form a root on the tooth, thereby making it easy to handle. After the amalgam has hardened, break away the plaster investment, warm the compound and remove the die. A thin coating of glycerin is applied to the model and the wax impression placed in position; this is carved, paying careful attention not to destroy contact points, wiped with a small amount of oil of cajuput and cleaned with acetone, invested and cast.

One of the features of the three-quarter crown for bridge attachments is that it necessitates only a minimum of tooth destruction, so to get a

maximum of strength one should use an alloyed gold. Dr. Hart has given us a gold that seems to meet the requirements in the matter of strength and color, (St. Louis Dental Mfg. Co., Hart Gold.)

#### IMPRESSION

The abutment pieces, polished, are placed in position in the mouth and an impression taken. For this work we take a full core impression, using modeling compound. In this method, the labial and buccal flange of a deep tray is cut away, and a roll of softened compound is placed along the occlusal and incisal surface of tray and pressed to place in the mouth; chill this, and cut away that compound which worked out buccally and labially, also that between converging teeth (if any).

The impression is removed, thoroughly chilled and replaced in the mouth; the buccal and labial edges of compound are coated with "Nujol" and a small roll of softened compound is placed in the posterior buccal region; now instruct your patient to whistle, the buccal muscles will press the compound into the interproximal spaces and give us a good sharp impression. Repeat this on opposite side for labial surfaces of anterior teeth; all being thoroughly chilled and removed. The abutment pieces are placed in position in the impression and buccal and labial plates waxed on. Place a carpet tack in each abutment piece, to reinforce the cast, and pour up with "Sump." A full impression is taken of opposing teeth and a cast made in "Spence" compound, Alstone or Weinstein's artificial stone. Articulate and mount on anatomical articulator.

#### FACING AND ROOT

Care should be taken in the selection of our facing to get the proper mesiodistal diameter through contact points; and it should be no longer than the crown of tooth which we wish to replace. At the proximo-gingival angles, grind away the shoulder which will reduce the mesiodistal diameter of neck. A backing of 1-500 platinum is placed over pins and turned back at right angles about 3 mm. below, giving us a base upon which to build the root.

In building the root it is well to use porcelain of a darker shade than the gingival color of facing as it will have a more natural appearance in case there is any recession of the gingival tissues or even reflecting through these soft tissues, will match the neighboring teeth and gums. The S. S. White, R. or J. porcelain comes very near to filling the requirements in the majority of cases.

The mix being made rather stiff, the root is built on and shaped with the fingers, quite some oversize and baked to a biscuit.

A good impression and the radiograph gives us knowledge of the direction of the root in the process, which information is necessary in our next step.



With a fine sharp instrument, cut in around the gingival of the tooth to be replaced on the "Sump" cast, being very careful not to destroy the outline of the gum septum. If the instrument is worked in at an angle, it will be quite easy to break out the tooth and still retain the outline of the root. With an oversize round bur, from which the blades (except the two main ones) have been ground off, drill down into the cast, following the direction of root as shown on labial surface of cast and in radiograph; get required depth (about two-thirds length of root) then enlarge to outline.

The biscuited root may now be ground to fit, and any additional changes made in form of facing. Bevel incisal and proximal edges of facing and entire cervical edge of root, using fine stones and plenty of water. When ground to proper size and form, scrub with Dutch Cleanser or any good powder, dry, and glaze.

Place porcelain in cast and wax in position, using the soft black wax; then coat the labial or buccal surfaces of the cast with separating fluid or soap and make a core impression of this surface in soft plaster. This impression acts as a guide in getting the proper relation of teeth and furnishes a backing against which we can get pressure in waxing up the "dummy." The dummies being waxed and carved, the wax and porcelain are separated by inserting the sprue into the wax, and touching the porcelain with sticky wax, and gently teasing apart. Insert carbon points into the pin holes in the wax, invest and cast.

#### ASSEMBLING AND SOLDERING

Fit casting to porcelain and thoroughly polish. Replace in cast, align with plaster core impression and wax at contact points with sticky wax. The core may now be removed and the gum portion of cast, cut away from porcelain root to permit of its easy removal, which may be done by touching the porcelain with sticky wax and gently teasing away. Scrape the separating medium from cast, soak in water and add sump to labial or buccal surface. When dry, boil out the sticky wax; a very small piece of fluxed solder and a needle flame from the blowpipe are sufficient to solder the parts at contact points. Since each part was polished before the bridge was assembled, a very little polishing at soldered points is all that is necessary to finish.

Have the patient return, teeth extracted, and fit bridge. If any grinding is needed on porcelain root, this must be reglazed before cementing.

In bridge work of this type, we give the patient a restoration that is esthetic, sanitary, and serviceable; we can more nearly duplicate the tooth that was sacrificed; a properly-fitted porcelain root prevents resorption of the process, thereby maintaining the gingival festoon; the porcelain is, as far as we know, the only material that really is tolerated by the body tissues and radiographic examination of cases, after several

years, have shown a regeneration of tissue to, and surrounding the porcelain root. We have a more natural contour to the lingual surfaces of restored teeth, which aids in mastication, deglutition, and enunciation, and eliminates the pockets found under the old style bridge work.

Bridges, with porcelain-rooted dummies attached to vital teeth have come, not only to stay, but to grow into use by more and more of the better dentists until within a very short time, we can look back at some of our old-style work and wonder "how we got by with it."

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## A DISCUSSION OF THE FACTORS TO BE CONSIDERED IN DETERMINING WHETHER TO EXTRACT OR CONSERVE DISEASED TEETH\*

BY THOMAS B. HARTZELL, D.M.D., M.D., MINNEAPOLIS, MINN.

IN MEETING the representatives of the professions of medicine and dentistry in different parts of the United States, I have been impressed with the fact that the dental profession has not given evidence of appreciation of the magnitude of its responsibilities. The rank and file of the profession still believes their responsibilities to begin and end with the repair and conservation of the teeth themselves. May I not, therefore, bring to your attention a few striking facts which tend to place these responsibilities in a light which forces a keener appreciation of them?

It is now conceded by the pathologists of the country that heart, joint, and kidney infections are largely of mouth origin. The isolation of the streptococcus viridans from the heart's blood and from ulcerating surfaces of the hearts of individuals, who have died from endocarditis, has been conclusively proven by numerous observers. The observation of our pathologists clearly indicate that heart, joint, and kidney infections are closely related, and may be regarded as one disease. This being the case, figures available from the bureau of vital statistics of the United States government tend to place in its proper relation, our responsibility as a profession. Certainly, the heart disease of the nation is largely traceable to mouth infection, and I here wish to submit figures from the Bureau of Vital Statistics for the years 1915 and 1916, on the relative importance of heart disease as compared to tuberculosis.

In the year 1915, the Bureau of Vital Statistics collected evidence to show that 105,202 people died of heart disease, while only 98,000 and some odd hundreds died of tuberculosis in all its forms. These deaths occurred among seventy per cent. of our population, because thirty per cent. of our population failed to keep statistics of sufficient value to warrant their tabulation. In the year 1916, the contrast between heart

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\*Read before the Mid-Winter Clinic of Atlanta Society of Dental Surgeons, March 14, 1918, at Atlanta, Georgia.



disease and tuberculosis is even more marked, for in that year, the deaths from heart disease in the registration area numbered 114,171 or 159.4 persons per 100,000 of the population. The death rate from this cause shows a marked increase as compared with 1900 when it was only 123.1 per 100,000. The total number of deaths from heart disease in the whole country, estimating our population at 115,000,000, would be 182,850. Tuberculosis, in its various forms for the year 1916, destroyed 101,396 lives in the registration area. Because of the progress in the prevention and treatment of tuberculosis, the decline in our tuberculosis death rate has been quite pronounced, having fallen from 200.7 per 100,000 in 1907 to 141.6 in 1916—a decrease of almost thirty per cent. However, tuberculosis causes more deaths than any other malady, except heart disease, and thirty-seven per cent. more than all external causes, accidents, homicides, and suicides combined. Quoting again from the Bureau of Vital Statistics, the only remaining death rate higher than one hundred per 100,000 in 1916 was that of Bright's disease and acute nephritis. The total number of deaths from these maladies in 1916 was 75,316<sup>1</sup>.

It will be seen, therefore, that heart disease is a greater menace than tuberculosis and it is equally true that heart disease, to a very large extent, is preventable by proper mouth sanitation. The principal source of infection is the enormous growth of streptococcus viridans in the oral cavity and on tooth surfaces, whence it enters the circulation through pyorrhea pockets, chronic dental abscesses, and tonsil crypts. These vital statistics just quoted take no account of the individuals whose lives are ruined by arthritis, nephritis of streptococcal origin, neuritis, gastric ulcer, chorea, septic purpura, iritis, and several less common forms of streptococciosis, which term has been recently advocated by Ulrich, of Minneapolis, to cover the various forms of inflammatory and pathologic lesions resulting from the invasion of the tissues by the streptococcus.

I desire to cite a case here of heart disease due to mouth infection. The above heart is that of Doctor X, who, when first seen, was suffering from gastric ulcer. He was sound in every other particular, as far as our chief of the school of medicine, University of Minnesota, could determine, save for the presence of eight abscessed teeth. He was advised to have his abscessed teeth removed, and was sent to his home. Doctor X returned home, but did not have his abscessed teeth removed. In less than one month, he returned for further examination, at which time he was found to be running a temperature and exhibiting heart weakness, having developed a loud murmur heard at the apex and transmitted to the axilla.

The patient was sent to bed in the hospital, December eighteenth, and an ice pack was immediately placed over the heart. The routine

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<sup>1</sup>Census Bureau's Summary of Mortality Statistics for 1915-16.

treatment for endocarditis was given and the extraction of his abscessed teeth was advised. The first abscessed tooth removed was done with every precaution to prevent contamination of the abscess. The tissues around the area were bathed in iodine, the tooth root surface was scrubbed with alcohol and iodine. Saliva was excluded with a generous pack of sterile gauze. The tissues at the tooth neck were cauterized and the root was then extracted. The abscess sack was split and cultured from, and grew streptococcus viridans in numbers. This technic was repeated on two abscessed teeth with the same result. Then, two more abscessed teeth were removed but the patient was absolutely unbenefited by these extractions. Therefore, we ceased removing teeth. This patient ran a course in the hospital of some eighty-two days, developing a purpura of the skin of the arms and legs; also, a progressive involvement of the joints, and in the end dying from complete exhaustion. Post-mortem revealed a large ulcer in the ventricle, most of the walls of which are cut away to better photograph the ulcer. The ulcer is almost an inch in diameter, and one-eighth of an inch high. It has the appearance of a spoonful of strawberry jam flattened out on the auricular wall. The valves immediately below the ulcer have sloughed off, leaving nothing but stumps of scar tissue upon which have developed large vegetations. The pillars of the columna carneæ of the heart have also ulcerated. Culture from the ulcer at the time of post-mortem developed prolific colonies of streptococcus viridans on blood agar. A root tip amputation undertaken on the post-mortem table under the strictest aseptic precautions also produced on culture, streptococcus viridans. The post-mortem further revealed small ulcers in the esophagus and also revealed a healed gastric ulcer.

Now in regard to the kidney, it must be remembered in thinking of Bright's disease that the medical profession does not always clearly differentiate kidney disease, and not infrequently, people die of acute kidney infection called Bright's disease. The term, Bright's disease, should only be applied to general glomerulo nephritis, which affects the glomeruli of the whole kidney. This brings me to the point I want to make, that streptococcal infection, whether the mild streptococcus viridans or haemolytic streptococcus presents a complex of symptoms in many cases, which has clearly indicated to medicine that heart, joint, and kidney disease is in a great proportion of cases so closely associated that many physicians think of them as one. Whether this be a just conclusion or not, it tends to increase our responsibility in dealing with streptococcal infections of the mouth. I here submit a table from the Minnesota Division of the Mouth Infection Research Corps of the National Dental Association, for the year ending July 1, 1916.<sup>2</sup> In this

<sup>2</sup>Report of the Mouth-Infection Research Corps of the National Dental Association, for the year ending July 1, 1916. Reprinted from the *Journal of the National Dental Association*, Vol. 111, No. 4, November 1916, pp. 333-362.



table, Hartzell and Henrici compare the destructive character of the haemolytic and non-haemolytic streptococci and show conclusively that the non-haemolytic streptococcus of the mouth can and does invade the tissues of these animals in about the same proportions as does the haemolytic streptococcus. One should remember in studying this table that the non-haemolytic streptococcus makes its appearance about the sixth hour after life and is always present after such time, while the haemolytic streptococcus is an occasional visitor. Therefore, the importance of the non-haemolytic streptococcus to the life of a nation is infinitely greater from the standpoint of its destructive power than the haemolytic streptococcus. This tends to place our responsibility as dentists in a clearer light.

The dental profession in years gone by has been chiefly engaged in conserving teeth without reference to or knowledge of the fact that in practicing this intensive conservation, they are oftentimes doing a serious damage to the patient, illustrated by the old aphorism, "Saving at the Spigot, but losing at the Bung." Medicine on the other hand, has been quick to grasp every new thought or theory for controlling disease. This was clearly evidenced when the profession accepted the erroneous statements made by Bass and Johns and Barrett and Smith that amoeba was the true cause of pyorrheal infection and that emetine was a sure cure for pyorrhea. It is not surprising, therefore, that there has sprung into being a great group of medical men and a few dentists, who, to control the death rate from mouth infection, vigorously assail the conservationist and ruthlessly sacrifice many valuable teeth.

In view of the fact that the writer has contributed a large amount of the evidence upon which these destructive mouth infections have been brought to the attention of the medical and dental world, it would seem no more than fair that he should also strive to place before the medical and dental profession a true perspective from which to observe the problem which necessarily confronts every man, practicing medicine and dentistry, as to what to do with diseased teeth, and under what conditions we are justified in removing necessary dental masticating organs, in order to prevent greater ills than those which arise from the lack of properly masticating our food. Therefore, let us consider for a moment the pathogenic flora of the mouth.

A close study of the mouth flora shows conclusively that while there are a great many bacteria found in the mouth at different times, there are really only four very important mouth organisms, and these I will mention in the order of their importance.

There is *first* the streptococcus salivarius, otherwise known as the streptococcus viridans. *Second*, there is the pneumococcus. *Third*, the various members of the staphylococcal group—*albus*, *aureus*, and *citreus*. *Fourth*, is the fusiform bacillus. These organisms named are practically always to be found in the mouth. Of the group of four men-

tioned, we have found by actual investigation, by collecting the bacteria of the mouth in great quantities and administering these mixed masses of bacteria to animals, that the streptococcus is the only one which is regularly re-obtained in the lesions thus created. This same streptococcus, which bacteriologists formerly thought to be non-pathogenic, when transplanted into animals, is the germ which produces many varied forms of lesion, and according to our own observations and those of Gies and Kligler, composes approximately one-half the bulk of mouth growth.

The staphylococcus, roughly speaking, produces a little less than one-fifth of the mouth growth. The remaining twenty to thirty per cent. of mouth growth is yeasts, thread forms, spirochaete, and accidental visitants; also, the fusiform bacilli, and pneumococci.

In 1915, Madame Brailovsky-Lounkevitch, of the Pasteur Institute, published an exhaustive article recounting her experience in the examination of mouth flora from birth until adult life.<sup>3</sup> In this paper, she maintained and proved that the first organism to make its appearance in the mouth of a babe is the streptococcus salivarius, which occurs about the sixth hour, and from that time on until the eruption of teeth, is practically the only organism of the mouth except occasional transient accidental visitants.

We have found upon examination and study of the flora of the mouths of individuals, that from the period of eruption of teeth until adult life, this same streptococcus makes practically fifty per cent. of the mouth growth. We now know that the presence of the streptococcus is almost universal. It occurs in houses, in dust, on the skin, in milk, and in many foods. There have been at least three streptococcal epidemics produced through the medium of milk, which have been reported in the medical journals. Probably, the most striking one was that in Boston, which was described by Theobald and Smith in the *Journal of Medical Research*,<sup>4</sup> and has been alluded to by many other writers.

The individuals who advocate complete destruction of dental organs in order to rid the body of streptococcal growth, therefore evidence profound ignorance. Wholesale extraction of teeth will not rid the body of streptococcal growth. One might as well advise removal of the transverse colon to rid the body of the colon bacillus. A much more sane method of cutting down the inroads of mouth infection is that of vigorous systematic mouth sanitation together with the adoption of a diet planned to prevent intestinal putrefaction. This is just as capable of reducing the enormous mouth growth to a safe minimum as are the present methods for controlling bacterial growth in milk, now demanded by our cities. The difference by weight and count in the number of bacteria per milligramme of tooth scrapings in dirty mouths to that of

<sup>3</sup>Contribution a l'etude d la Flore Microbienne Habituelle de la Couche Normale (Annales de l'Institut Pasteur, August, 1915, xxix, p. 379.)

<sup>4</sup>*Medical Research*, 1915, Vol. 31, page 455.



reasonably clean mouths has been shown by Kligler and Gies<sup>5</sup> to range from eight hundred million in the dirty mouth to five to eight million in the clean mouth. Translated into terms of oral prophylaxis, we may find that ten minutes a day spent in proper mouth sanitation will produce this safe minimum. The writer's first thought then in regard to the extraction question is that correct mouth sanitation and proper diet will make ruthless extraction of teeth unnecessary. A proper education of the dental profession in a broad way will soon enable them to place in a true perspective the factors which actually justify conservation, or, on the other hand, extraction.

Please recall that the mouth streptococcus makes its appearance at birth, and that it forms (roughly speaking) half the mouth growth; also that our bodies are of greater or less degree, sensitized to its presence and that its most destructive attribute is the production of secondary anaemia. Its toxins lessen vitality and lay a foundation of physical weakness in an individual for its ravages in the tissues when it becomes too numerous for the leucocytes in the blood stream to destroy the individual members of the family, which gain access to the stream. Therefore, the first broad view that should come into the mind of an individual as to the conservation or destruction of infected teeth should rest on the wealth or poverty of the blood stream. To illustrate, an individual with a full complement of red cells, five million to the cubic centimeter of blood, with a haemoglobin of not less than eighty-five, and a leucocyte count of seven to eight thousand to the cubic centimeter, together with a normal digestion, a normal urine, and a reasonable amount of energy, is safe in conserving any of his dental organs which might present for treatment. This conservation should be first, the reduction of mouth growth by prophylactic means to as nearly as possible the minimum, and, where teeth must be devitalized, such devitalization should be done under exactly the same kind of surgical asepsis, as is demanded of surgery of the brain or abdominal cavity.

Now as to the other side of this question, as to when we are justified in breaking down dental mechanisms by extraction. This must rest again upon an examination of the patient's vital resistance, expressed by the blood stream, together with any evidence which tends to prove that the individual has been oversensitized or brought into a condition of anyphylaxis to streptococcal infection by a long exposure to such infection. A clinical picture, which would demand extraction, might be as follows: Early history of tooth and tonsil infection, swollen glands, draining the mouth and throat area, poverty of red cells, reduced hæmoglobin, and a markedly increased or decreased leucocyte count. It is a well recognized fact that a leucocyte count above ten thousand is strongly indicative of deep seated infection, while a low leucocyte count,

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<sup>5</sup> *Journal of Allied Societies*, September, 1915, Volume 10, number three, pages 282-331.

say five thousand or less, points to the fact that the leucocytes are waging a losing battle, particularly if such reduction in number is accompanied by reduced hæmoglobin. If a clinical picture presents with the evidence of secondary infection, myocarditis, endocarditis, or nephritis accompanied by joint or kidney disease (evidenced by casts, albumen, or sugar) extraction is justifiable. Any of the factors above recited, accompanied by the poverty of red cells and poverty of hæmoglobin, even if the leucocyte count be normal, fully justify the extraction of diseased teeth. One might go on and enumerate combinations of clinical pictures which would bring in many other physical conditions dependent upon streptococciosis. For instance, in chronic streptococcal infection, one infrequently finds cholecystitis, and on palpation, an enlarged spleen. While the dentist, who has not had the advantage of a medical training, may not be capable of gathering all the evidence tending to establish a condition demanding the positive eradication of all primary sources of infection which can be reached, he can always or almost always bring into his counsel, an internist or the family physician to aid him in gathering the necessary data on which to base a sane conclusion. The time is fast approaching, if not already here, when the men in the practice of medicine and dentistry are willing to listen to the arguments, pro and con, which should determine a wise course of treatment. Individuals, who present a clinical picture which tends to establish the fact that the body has waged an unsuccessful war against streptococcal infection for a series of years, perhaps from youth up, and who are now suffering from any one of the evident phases of streptococcal infection, had better exist without teeth than go on with a primary intake from even one abscessed tooth. It is my observation that many times a sensitization of years' standing with a single, small, continuous source of infection is sufficient to maintain such a marked secondary condition as to utterly unfit the individual for the duties of life. Let me mention a case illustrating this point:

A man forty-eight years of age, six feet, one inch tall, weight two hundred pounds, with a normal blood and urine, having led a very active and vigorous life and possessing a very strong denture, was, during the latter part of 1916, stricken with septic purpura of the upper and lower extremities. This purpura came on following any muscular effort and was exaggerated by walking or carrying even the moderate weight of a light traveling bag. The hemorrhages would disappear on rest in bed, only to re-appear when muscular effort was indulged in. The patient sought relief in different parts of the country and was advised that his tonsils were possibly the source of his infection. Consequently, his tonsils were removed in 1916 with some temporary benefit resulting thereafter, but after a period of rest, and the patient later again attempting to work, the hemorrhages recurred in greater numbers. When this man was first seen by the writer, there had recently occurred a large crop of



new hemorrhages on his arms and legs. Patient was advised to go to bed and rest for a few days. Accompanying the purpura, was a broken compensation, which heart lesion doubtless originated from the same source of infection which caused the hemorrhages under the skin. The patient was subjected to a very searching physical examination by the chief of medicine, University of Minnesota. No source of infection could be demonstrated. Finally, this patient was referred to the writer for an examination of his mouth, and it was found that the individual had two devitalized teeth with very slight granulomatae about their root ends. The gums adjoining the teeth were rather a purple or lavender color and very much thickened. No pus could be squeezed from the gums, although an instrument could be thrust into the gum crevice of the molar region both above and below from one-eighth to one-fourth of an inch. There were exhibited a few deposits on these roots. The removal of the deposits caused profuse hemorrhages from the gum, but no pus was seen to issue from these gums at any time. Slow treatment of the teeth was practiced, operating upon one tooth at a time and allowing a period of three to five days to elapse before another was touched. Upon complete cleansing of all the root surfaces, the hemorrhages had quite disappeared and have never recurred in any great amount since. The patient occasionally, under heavy stress, will have a very few small punctate hemorrhages on the lower extremities above the ankles. Since the mouth treatment was given him, patient has been engaged in his usual vocation for the past four months, although he has been incapacitated for the previous two years. The follow-up treatment in this case has been vigorous massage, which emptied the congested and infected blood from the tissues adjacent to the teeth into the general blood stream, so that the bacteria hitherto lodged in these tissues were readily phagocyted. This after treatment was most important. The patient has also practiced intensive mouth and tooth sanitation, rubbing the teeth until they shine and removing from them most of the daily growth of bacteria. In this connection, it must be remembered that the streptococcal growth, when absolutely unrestrained by physical conditions, doubles every thirty minutes. Therefore, the great importance of vigorous scrubbing of mouth and tooth surfaces with the plentiful use of water to flush out the organisms, and the use of disclosing stain to guide the patient in his effort to get his teeth clean, and to restrain the growth and lessen the number of bacteria from day to day, is here emphasized.

I have mentioned this particular case, because septic purpura is comparatively rare and had it not been for the method adopted in eradicating this infection, the patient would never have completely recovered, as with a broken compensation dependent on myocarditis and a previous old endocarditis, had complete extraction been performed at one sitting, the result might have been the wrecking of the patient's whole chance of life. A normal blood and urine justified conservation.

Let me relate another case history, in which extraction was wrongly advised—that of a young woman thirty-two years old with an arthritis of the ankles and insteps of sufficient severity to make walking extremely painful, with absolutely no source of infection hitherto discovered to explain the arthritis. Examination of the mouth showed that every tooth in the upper and lower arches was vital. No large cavities existed and no lesion of the mouth, save a very vigorous gingivitis, involving less than one-eighth of an inch of the gum margin. Upon the application of disclosing stain, masses of bacterial plaques were revealed, covering all save the grinding surfaces of the teeth. This patient was so extremely sensitive that even in doing an ordinary prophylaxis, it was necessary to administer an anesthetic. Five different treatments, five days apart, using fine stones to grind out the pits dissolved into the enamel surface by the heavy masses of acid-forming cocci, and the reduction of mouth growth resulting in complete reduction of the swelling of the ankle and instep, and the continued practice of mouth prophylaxis of fifteen minutes a day, massaging the gums with the ends of half-inch cotton rolls and scrubbing the teeth with brush and paste, applying disclosing stain twice a week, resulting in a complete cure of the gingivitis and the arthritis of the feet, which cure is still perfect. It must be remembered that no dead pulps existed and no teeth were extracted and the blood picture was good.

Take a third case, a young woman, thirty-five years of age: two children, one eight years old, and the second child lost from purpural uræmia, accompanied with a blood pressure of 250. No cause known for the uræmia. Patient was advised that the condition arose as a result of mouth infection and was referred to the writer for the complete removal of all her teeth. A careful examination of the teeth in the arches showed pyorrhea pockets around the molars, none of which were more than one-eighth of an inch in depth, and two pulpless teeth, left and right laterals in the upper arch. The roots of these teeth were rather imperfectly filled and presented small granulomata. The treatment given this patient was slow inoculation by pyorrhea treatment given seven or eight days apart, and was completed by the amputation of the two diseased root tips in question. The patient at the beginning of treatment presented casts and albumen in her urine, and possessed a blood pressure of 250. At the close of her mouth treatment, the blood pressure had dropped to 190 and only an occasional trace of albumen can now be found in her urine.

These three cases serve to illustrate what may be done by intelligent conservation accompanied by proper daily mouth sanitation. In these three cases, the hæmoglobin and red cell count were practically normal, and the leucocyte count showed a rise of two to three thousand. Had these cases presented very marked anæmias or past histories of long drawn out chronic infections it probably would have been impossible



to have benefited them, but the leucocyte count and the hæmoglobin indicated to the writer a strong possibility for cure. Though in two instances, complete removal of the teeth was advocated, no teeth were removed, while in the case of septic purpura, the third molars were removed because the pockets around the third molars were more than one-fourth of an inch in depth, and the balance of the denture was in such perfect condition that the patient could well afford the loss of his third molars.

Allow me to present a case illustrating the line to be followed where secondary anæmia has existed for some time:

Mrs. D., seventy years of age, presented a set of sound teeth, which formerly had been affected with pyorrhea. Pockets around teeth but not discharging pus. When she first appeared, April 17, her red cell count was 3,000,000 and her hæmoglobin was 70. Patient desired the removal of all her teeth as she had spent the winter in the South and lived under the most encouraging conditions to improve her health and increase the hæmoglobin and red cell count. No improvement of anæmia occurred. Slow extraction of her devitalized teeth was undertaken, as well as those affected with pyorrhea—one tooth every week or ten days. Since this has been accomplished, her red cell count has increased to 4,100,000. In this case, pyorrhea treatment had been administered three years before, and as far as the mouth tissues were concerned, the treatment was apparently successful. Nevertheless, there must have been a sufficient amount of growth around the dead teeth and in the seemingly healed pyorrhea pockets to reduce the patient's hæmoglobin and blood count. Though no masticating surfaces have been placed in this mouth following the extractions, the patient being limited to the incisors and cuspids above and below, the red cell count has increased.

In this case without a blood picture, conservation would surely have demanded retention of the teeth. The blood picture, however, fully justified extraction, and though it was necessary to break down a good masticating mechanism, the patient was greatly benefited as far as her general health was concerned. In this connection, too much stress cannot be put upon the pioneer work done on the subject of hæmanalysis and urinalysis by Colonel Wm. H. G. Logan. The result of his experimental work is recorded in the *Dental Review*, September, 1916.

Another case, a man about sixty years of age, presented teeth which were apparently solid in his arches, but with a series of pyorrhea pockets involving most of the teeth. This case seemed to be clearly within the scope of successful treatment. Therefore, one pyorrhea treatment was given, which markedly reduced the energy of the patient. The patient returned in one week for an additional pyorrhea treatment. Immediate examination of the urine was suggested. The urine was carefully examined. The specific gravity was high and it contained between four and five per cent. of sugar. Conservative treatment of these teeth was

immediately discontinued, and extractions were undertaken at intervals of seven or eight days apart. In this instance, the patient was saved the burden of pyorrhea treatment. Under ordinary conditions with a healthy kidney and normal blood picture, these teeth would have been treated.

Therefore, we need to emphasize the fact that modern means of laboratory diagnosis and the taking of careful case histories with the modern X-ray pictures, should be the foundation stones upon which conservative or destructive dentistry should be determined.

If the dental and medical professions will get together on all cases in which extraction is advocated, and will gather and weigh the evidence each case presents, it seems altogether likely to me that we can arrive at such a sane and reasonable judgment of the conditions that justice will be done to all.—*American Journal of Surgery*, May, 1919.

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#### "A REPORT OF FRENCH-BELGIAN RELIEF WORK"

EDITOR THE DENTAL SUMMARY.

Dear Sir: I have just received the July number of THE DENTAL SUMMARY.

Permit me a remark on the "Report of French and Belgian Relief Work," which astonished me very much:

"Kindly look over unused equipment and send a list of what you can spare, including materials also, to the office of the president of the League, 131 Allen St., Buffalo, N. Y. Do not delay but bear in mind that many instruments now idle and rusting may bring bread and life to our suffering brothers."

Now the French have been the greatest people in the world during the war. They have saved the world's civilization. For five years the battle has raged on their ground, they claim the honour and admiration of all.

The French may be poor, but they still preserve their pride.

If the American dentists wish to help their unhappy French brothers, they can allow "their idle and rusting instruments" to still be in their drawers, and contribute in another way.

France does not ask for charity, but if one gives, one gives the best, or nothing.

I do not speak for myself, so you can rely on what I say. I remain, sir,

Yours very truly,

E. BENOIST, FILS, *Chirurgien Dentiste*

Pau, France, 1, Rue Serviez, August 7, 1919





# EDITORIAL

## WHAT ARE YOU DOING FOR THE RETURNING DENTISTS ?

Hundreds of dentists responded to their country's call and went to war. In going they left their practices, in the main their only means of livelihood. They served their country, some as members of the dental corps, some in the interests of the Red Cross, and some as privates, and are now returning to resume practice. Many upon discharge have found their practice gone, and that they must begin again and build anew.

What are you doing to aid these men?

Have you accepted any of their patients and if so are you requesting these patients to return to their former dentists?

Imagine yourself returning under these circumstances and think what you would expect of those dentists to whom you had sent your patients or of others who had received them. If there ever was an opportunity to put the Golden Rule into practice, it is now.

Dentists never had as much to do in practice as at the present time, and can find many ways to assist the returning brother to re-establish his practice; but, *are they doing it?*

Every one of us owes a great debt to the boys who sacrificed their all in representing us in the great strife, and it is but just that we should at least show our appreciation for what they have done. Dentists who remained at home should be only too thankful that they are in position to help their fellows, and do all they can to give them assistance.

The other day we received the following communication from a returning dentist:

"I was in the service as a private, although I was a graduate when I enlisted, and offered my services as a dentist at private's pay. Since I have returned, I have opened an office but am not looking forward to the surrounding dentists to contribute to my practice by giving me any of their own. I have, however, been trying to get into the free clinics and several other such positions where I could help make my office expenses, but there doesn't seem to be any opening.

"I belong to the Local, State and National Dental Societies, yet there are men in the clinics and other places who were not in the service, and who do not even belong to the Local Society.

"Perhaps you can suggest some means for the returning dentist that would help him carry his expenses until he is able to depend upon his practice."

What man with a heart could resist an appeal of this sort? Yet this is probably only one of hundreds of similar cases that exist today. Why don't the members of our Local and District Societies throughout the United States look into these cases and give all the assistance they can to help the returning men re-establish themselves in practice?

They could not do a more commendable act for their fellowmen, nor for their profession.

# SUGGESTIONS

CONDUCTED BY F. R. CHAPMAN, M.S., D.D.S., COLUMBUS, OHIO

(To Our Readers: Give others the benefit of your practical suggestions by sending a description of them to Dr. F. R. Chapman, Schultz Building, Columbus, Ohio.)

## Local Anesthesia in Children

The psychic element is not so important in children as in adults when operating under local anesthesia. Less restraint is necessary during the administration of local than during the administration of general anesthesia. Much more tact and a more refined technic are required in operating upon children under local than under general anesthesia. The margin of safety possessed by novocain over general anesthetics is as great in children as in adults. A large percentage of bad risks should have the benefit of this margin of safety. More extensive application of novocain in the surgery of children is indicated, and, if a more common use of this drug obtained in this class of cases, the science of medicine as well as the art of surgery would be benefited.

—R. E. Farr, *Interstate Medical Journal*

## Oral Sepsis and Focal Infection

If patients with one or more pulpless teeth are complaining of bad health, I do not hesitate to remove the pulpless teeth when all other sources of infection have been excluded. I have arrested arthritis deformans, cured headaches, indigestion, boils, skin eruptions, and large glands in the neck, supposed to be due to tuberculosis and other diseases, by removing pulpless teeth that did not show defects in the X-ray.

We have arrived at a very critical period in dental practice in regard to oral sepsis and focal infection. Are we to go on filling roots of teeth when we know that 95 per cent. of root fillings are failures, and that many diseases of the body are due to imperfect root fillings?—or shall we extract the teeth to be sure that systemic disease cannot occur? The work of the dentist is confined to the care of the teeth; should not his business be, above all others, to develop perfect teeth for his patients and thus avoid decay? Should not prophylaxis be the main aim and goal for the future practice of dentistry, since health, longevity, and happiness depend upon sound teeth?

—Eugene S. Talbot, *Dental Cosmos*.

## Sacred Tooth of Buddha

The Sacred Tooth of Buddha is exhibited every five years for the adoration of the faithful, and in the interval neither prince nor millionaire can obtain a glimpse of its venerable form. Both the official head



of Buddhism in Ceylon and the British representative would have to agree to any departure from this usage, so the rule is strictly observed. One instinctively asks why the relic is so sacred. The history of this solicitously guarded treasure, as narrated by the Singhalese priests, may be summarized as follows: When Buddha's body had been burned, an Arahat took an unconsumed fragment from the ashes of the funeral pyre. This was the left canine tooth, destined to become the most celebrated of the many wonderful relics of the founder of the faith. After a rather peaceful existence of about eight centuries in the southern peninsula, it became so famous, and created such disturbance in the Brahmanic community that it was surreptitiously carried to the Buddhist centre in Ceylon, concealed in the tresses of the Princess Kalinga. Naturally, such a priceless possession proved the cause of international strife. Once, at least, it was carried back to the mainland of India, but was recovered by Prakrama Bahu the Third, to become once more the source of untold blessings.—*F. B. R., in Asia Magazine.*

### What is Ptomaine Poisoning?


The term "ptomaine" poisoning has become a cloak for ignorance. This, sometimes suspected, is the editorial pronouncement of the *Journal of the American Medical Association*. In fact, any acute gastro-intestinal attack resulting from a great variety of causes is apt to be called "ptomaine" poisoning. Selmi, in 1873, first used the word ptomaine (from the Greek, ptome, a corpse) to include the poisonous products of putrefaction which gave the reaction then looked on as characteristic of vegetable alkaloids.

Our conception of these substances has changed markedly. The so-called ptomaines isolated and described by Selmi were usually obtained from putrid organic matter that had decomposed past the point at which it would be used as food. Furthermore, most of these substances were tested by injecting them subcutaneously or intravenously into animals. Many substances are poisonous when thus introduced, though they may be harmless by the mouth. Chemists avoid the use of the word ptomaine, for the reason that it lacks precision. This is a curious instance of the popular use of a technical term that sounds well but means little. Only clinicians cling to it as a convenient refuge. Ptomaine is a term for chemical substances of uncertain origin, unknown nature, and doubtful existence.

### Aid in Opening a Flask for Inspection

When the case has been packed with the desired amount of vulcanite and tested with a separating cloth, the latter frequently sticks to the vulcanite. Apply a small amount of gasoline or chloroform to the cloth when you can remove it very easily without disturbing the vulcanite.

—*F. W. F., Pacific Dental Gazette.*



# NATIONAL DENTAL ASSOCIATION ANNOUNCEMENTS



Entrance to a Beautiful French Court Yard

New Orleans.—Members of the National Dental Association fond of fishing had better bring their strongest rods and reels to New Orleans when they come to the National convention, October 20th-24th. The waters surrounding New Orleans are teeming with edible fish from the aristocratic and palatable pompano and mackerel to the plebian and coarser textured catfish and chopique.

"Spend your vacation in New Orleans in October," is a slogan the general convention committee has adopted in urging members to be here for the big meeting. It is understood many will follow this plan. The Indianapolis delegation, coming nearly one hundred strong, have announced they intend to fish and enjoy life generally. This does not mean they will pass up the convention; they intend to take to the great outdoors after the meeting is adjourned.

October is an ideal fishing month around New Orleans. The city is surrounded by lakes,

bayous, passes, and other forms of water easily reached by railroad. All of the fishing resorts boast clubs at which fishermen can obtain live bait, tackle, food, motor launches and other things that go with a day on the water.

Steps have been taken by the State Convention Commission to preserve fishing for the whole state; this does not mean that fishing is restricted. These rules apply principally to commercial fishing, the sportsman having ample leeway to catch as many as he likes.

In addition to the speckled trout, red fish, buffalo, drum, croakers and sheephead, the waters abound in sharks and tarpon, the later measuring all the way from two to six feet and weighing from ten to two hundred pounds. The tarpon feed on mullet, lying in wait two feet under the surface until a school appears overhead. The tarpon then jumps and splashes, killing mullet right and left. This provides his feast.



As all fishermen know, the tarpon is a fighter, and many are the memorable battles that have been staged in Louisiana waters. The guide of the Winchester Club at Lake Catherine, only a few miles from the city, has for a trophy a tarpon measuring six and one-half feet. He landed the monster in twenty minutes with ordinary reel and rod.

When it comes to fish stories, nearly every sportsman in New Orleans can spin them. For instance, Doctor Joseph P. Wahl, general chairman of the local committee, recently visited Mississippi Sound, where he caught five red fish averaging five pounds in about five minutes.

"They were grabbing the hook before it hit the bottom," he declared.

Not to be outdone, another member of the committee told how he caught a number of fifteen pound drums off Deere Island, a famous government game preserve.

One of the favorite methods of fishing is to "bait the hole" the night before. Clams usually are used for this, the bait attracting sheepheads. One fisherman who recently visited Chef Menteur baited a hole the night be-

fore and went out early next morning. He caught thirty sheepheads weighing all the way from one to five pounds.

Among the famous fishing holes within a few minutes ride of the city are Lake Pontchartrain, the Rigolets, Lake Catherine, Little Woods, Chef Menteur, South Point, Biloxi, Pass Christian, Bay St. Louis, Ycloskey, Mandeville, Milneburg, Spanish Fort, West End, Lake Borgne and other places too numerous to mention.

New Orleans, the largest sea food market in the world, also is famous for its oysters. It has been said, (by visitors) that the oysters sold in New Orleans have a much richer flavor than the famous Chesapeake Bay product. However, this is a point for discussion among oyster consumers.

Soft shell crabs, frogs, shrimp, clams and hard shell crabs are plentiful in New Orleans and occupy a prominent place on all menus. Those who like sea food will make no mistake by coming to New Orleans whether they are able to go out and catch it or not.

"They'll be bitin' boys; come along," is the word the local committee sends out.

### One Reason for High Prices

American factories are today using six million or more workers to do what four and one half million men could do as well if they were fairly trained. This means that American manufacturers are paying the wages of one million and a half workers who are really adding nothing to the total output of the industrial system. In the manufacturing section of New England,—and a few portions of the United States are more important in the production of our daily necessities,—factory experts have stated that the factories are not more than 60% efficient in output, merely for want of more skilled and intelligent man power. This does not compare very well with a pre-war Germany in which individual industrial training was so successfully operated that 65% of the managerial and technical force consisted of men who had started work as unskilled or semi-skilled labor.

# SOCIETY ANNOUNCEMENTS

## Association of Military Dental Surgeons of the United States

The annual meeting of the Association of Military Dental Surgeons of the United States will be held at New Orleans, La., October 20th-24th.

R. W. WADDELL, *Secretary- Treasurer*

347 Fifth Avenue, New York.

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## Northern Indiana

The thirtieth annual meeting of the Northern Indiana Dental Society will be held at Muncie, Ind., on Wednesday and Thursday, Sept. 10 and 11, 1919.

A cordial invitation is extended to all dentists to attend.

EARL BROOKS, *Acting Secretary.*

Noblesville, Ind.

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## International Prosthetists

The First Annual Meeting of The International Society of Prosthetists will be held in New Orleans, October 17th and 18th.

The officers of this new Society which was tentatively organized during the last meeting of the National Dental Association in Chicago are as follows: W. A. Giffen, Detroit, president; Russel W. Tench, New York City, treasurer; Dayton D. Campbell, Kansas City, secretary.

DAYTON D. CAMPBELL, *Secretary*

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## Meeting of School Clinicians

A special conference of dentists operating in school dental dispensaries and of persons interested in such is to be held in New Orleans at the time of the National Dental Association meeting, October 20-24.

At a similar meeting held June 13th at Syracuse during the New York State Dental Society meeting, so much interest was shown that a committee was named and instructed to call this National conference.

All persons interested are requested to extend their suggestions or questions to the committee.

DR. WILLIAM H. LEAK, *Chairman.*

Oral Hygiene Inspector,

New York State Department of Education.

DR. S. R. MEAKER, Auburn, N. Y.

DR. ERWIN SCHEID, Dental Director,

Chazy Central Rural School, Chazy, N. Y.



# NEWS and OPINIONS

CONDUCTED BY G. E. HARTER

## Warning!

**TO ALL DENTISTS:** In order to avoid the chance of annoyance and loss of money, make no purchases and pay no money to strangers, or to representatives of concerns not personally known to you to be well established and reliable in every way. Do not accept checks from strangers in payment of bills for services or anything else. Do not cash checks for strangers. Do not invest money in anything, any scheme, oil well, mine, orchard, farm or factory without first submitting the whole thing to a banker or A1 business man well known to you. Do not sign any kind of paper, subscription blank, note, letter--anything presented by anyone not known to you to be reliable and which has not been thoroughly investigated by you or by some business man or banker. Schemes that offer unusually large returns are almost sure to be fraudulent. Money is seeking investment in anything promising large returns, and it usually is quite unnecessary for any one to solicit funds for investment in them.

**Keep your money and your money will keep you.**

More than one hundred candidates passed the Pennsylvania state board at its western meeting at Pittsburgh, August 1, and two hundred and forty at the eastern meeting at Harrisburg.

Dentistry is now recognized as part of the treatment for the cure of stutterers.

Rochester Dispensary is to add nose and throat departments.

There are twenty-six new dentists in New Jersey, by grace of the State Board which met at Trenton, August 7.

A "Professional Guild" has been organized in New York, made up of dentists, doctors and druggists, for the purpose of applying the disciplinary boot to politicians and others who opposed needed legislation and enact such as works a hardship upon the professions interested. In New York particularly, the practice of these professions, especially that of medicine, has been made so difficult that some relief must be had, or the profession in that state threatens to become depleted through desertions.

The New Jersey State Association is again in the throes of dismemberment, a faction again having taken exceptions to the "regular" slate offered for election at convention. An appeal probably will be made to the National body for adjustment.

Webster, Mass., free clinic opened Sept. 1.

Drs. F. R. Carson, of South Bend, and J. M. Siegel, of LaPorte, Ind., have formed a partnership for general practice at the former city.

Wisconsin State Board passed one hundred and eighteen candidates at its meeting July 11. This is the largest class ever passed in the state.

From the "*Stars and Stripes*": Imagine, if you can, a solid monument of amalgam ten feet high and three feet square, and build around it a base some twelve feet square, made up entirely of extracted teeth, and you will have an idea of what went into and what came out of the mouths of soldiers of the A. E. F. in one month. This represents as much work in one month as is ordinarily done in a city of the size of Philadelphia in an entire year.

Dr. Clement, New York, alleged diploma fakir, now serving a term at Dannemora for forgery, must face two additional sentences when his present term expires, one for the alleged selling of talcum powder under an aspirin label, and the other for obtaining large sum of money for which he agreed to obtain a genuine Regent's certificate, and a degree of D. D. S.

A Minneapolis dentist has been sued for \$10,000 for alleged malpractice, in that, during an operation, the patient suffered a dislocated jaw. My! At what a tremendous valuation some people hold the power of gab.

Ninety-eight new dentists in Kansas is the result of the late meeting of the State Board at Wichita.

Dental and surgical instruments, chemical glassware and porcelain products will be subject to an import duty of 60 per cent. if a House-bill now before the Senate becomes a law. The bill also repeals the duty-free clause of previous laws affecting imports for government bureaus and educational institutions.

Canton dentists are heading a campaign for additional school clinics. They'll get them. Canton dentists are a bunch of intelligent pushers, who know what they want and how to get it.

Texas now has eighty-two new dentists, thanks to the action of the State Board at Dallas, July 19.

All Tennessee dentists must register or be barred from practice.

I have heard of one case in which it has been necessary for a returned army dentist to bring suit for possession of his offices against a man to whom he had turned over office and practice temporarily. It seems almost unbelievable that such action should be necessary. How any man calling himself a man can attempt to hold the lawful owner from possession of his

## THE DENTAL SUMMARY

property under such circumstances recalls that beautiful passage from *Nusantiana Americanna*: "What funny things a fellow sees to shoot when he hasn't brought his gun along."

Have you joined the weekly-half-day-closing club? If not, better do it. You will live longer and practice better dentistry if you do.

A report of the operation of the West Hoboken, N. J., public school clinic for the first half-year has just been published, showing that the clinic has been an immense success, nearly seven hundred operations having been performed at an average total cost of \$1.20 each. Everybody concerned is more than pleased, and there is talk of establishing a second clinic.

And now faulty dentures are accused of being a prolific cause of cancer.

A building for the Mayo Brothers dental clinic is being erected at Rochester, Minn.

New Jersey dentists contemplate the establishment of state-wide clinics. Both local and portable outfits are being considered.

Dr. George E. Potter, Wakefield, Mass., member of the dental corps, has been promoted to the rank of major. He is still overseas, being among the first of those sent to relieve starving Poland.

Some strange things have happened in this world of ours, but none more strange than the present attitude of the German mind, which assumes that the rest of the world stands by with hat in hand, ready to welcome the bloody butcher to fellowship and trust. I know of one case in which a concern cabled an American business man, with whom, before the war, it had business relations, asking that the American secure for it a valuable agency for American goods, expecting the receiver of the cablegram to vouch for its good purposes and financial ability. Can nothing make the hun understand that he is an outlaw; that, since his hand has been against every man, he must expect the hand of every man to be against him until he has reinstated himself by sincere repentance and voluntary restitution? To add insult to injury, the cabling concern had appropriated a good many thousand dollars belonging to the American for use in converting its plant into a munition works; and, so far as it is concerned, still owes the money.

Dr. A. S. Linscott, of Marion, was re-elected president, and Dr. Robert H. Vollmayer, of Toledo, secretary, of the State Board of Examiners at the meeting held in Columbus, July 29. Two worthy gentlemen properly recognized.

THE DENTAL SUMMARY has issued in pamphlet form the articles on Industrial Dentistry appearing in the June number. A copy will be sent free to all who apply.

A President in the White House is worth two in Europe.

Are we finally to get a League of Peace or a piece of league?

### Wars Then and Now

In times past when the country was in danger, and wars had to be fought, the United States army was recruited almost entirely from volunteers. The brave and the patriotic rushed to the colors to do whatever task was needed for the defense of the flag, and then go home. The American Revolution was successfully fought by volunteers who went back to the farms for their spring plowing. These soldiers had dropped their occupations only when their own firesides were threatened, but it took the United States eight years to win the American Revolution.

This war was fought on a different basis. The people of the United States decided to organize to win the war in the shortest possible time. Through Congress and the President the people of the United States established the draft and universal military service for the duration of the war. An army of four million men was mobilized by the government, trained and equipped, and sent of France. We won the war sooner than we expected—about three years sooner.

And now that the great army is being demobilized at the rate of two hundred thousand to three hundred thousand a month, the soldiers cannot be left to drift back into jobs. The work of getting jobs for the soldiers and sailors who have lately served the United States has been organized. The United States government is guiding this work. Under the guidance of Colonel Arthur Woods, former police commissioner of the City of New York, and now assistant to the Secretary of War, all the federal departments, the Governors of all the states and the mayors of the principal cities are co-operating to give soldierless jobs to the jobless soldiers.

### Robberies

Dr. W. D. Williams, Steubenville, Ohio, office was robbed some time between Saturday evening and this Monday morning. \$5.00 filling gold and sixty flat pin facings are missing.

Dr. C. L. Simpkins, Steubenville, Ohio, was also a victim suffering a loss of \$125.00 in gold scraps, plate and solder and a ring.

### Recent Patents of Interest to Dentists

- 1,302,499—Removable denture, Earnest C. Bennett, New York, N. Y.
- 1,303,223—Making artificial dentures and occluding form for the same, Ormond E. Wall, Honolulu, Hawaii.
- 1,303,341—Grinding wheel for dental purposes, Wm. W. Curtis, Chicago, Ill.
- 1,304,304—Bottle or jar for dispensing dental liquids and the like, Nathan K. Garhart, Watertown, Mass.
- 1,304,038—Dental plate, Adolph J. Glaser, Comfort, Texas.
- 1,303,881—Artificial tooth, Thomas. F. Glenn, Ardmore, Pa.
- 1,304,087—Apparatus for the manufacture of dental crowns, David T. Parkinson, Wichita, Kans.



## THE DENTAL SUMMARY

- 1,304,396—Former for the matrices for use in the restoration of teeth, William C. Smith, Milford, Dela.  
1,304,881—Tooth-band, Joseph E. Johnson, Louisville, Ky.  
1,304,720—Dental pliers, Jacob L. Young, New Rochelle, N. Y.  
1,304,721—Orthodontia appliance, Jacob L. Young, New Rochelle, N. Y.  
1,304,722—Orthodontia appliance, Jacob L. Young, New Rochelle, N. Y.  
1,304,723—Orthodontia appliance, Jacob L. Young, New Rochelle, N. Y.  
53,366—Design, Individual dental plate cleaner, Jephtha G. Hollingsworth, Kansas City, Mo.

Copies of above patents may be obtained for fifteen cents each, by addressing John A. Saul, Solicitor of Patents, Fendall Building, Washington, D. C.

### Reclaiming Used Wax

For some time I have had a habit of throwing odd pieces and all waste wax into a vacant drawer in the laboratory bench.

Wanting a quantity of wax for some experimental work, I thought of this collection, which I proceeded to put into a two-quart boiler and place over a slow fire to melt, finally boiling it for about ten minutes to insure separating all the residue, or rather, foreign matter.

Allowing the wax to cool, I then removed it from the boiler, reheated and emptied the residue, replaced the wax and remelted it. While hot I dipped pieces of clear glass into the molten wax, withdrawing to cool slightly and redipping until I had the desired thickness of deposit on the glass. While warm but firm I ran a sharp knife about the edges of wax on the glass, cutting off that portion, and stripped the wax sheet from the glass.

I was agreeably surprised at the quality, texture, and color of the wax—so much so that I am using it for many wants that arise in the laboratory.—*C. R. Scholl, Dental Cosmos.*

### Forty-nine New Dentists

Portland, Ore., July 9.—Forty-nine dental students passed the recent examination admitting them to practice in Oregon. Correction of the papers was made by Drs. H. H. Schmitt, of Portland, president of the State Board of Dental Examiners, and the following members of the board: Drs. J. M. Miller, Eugene; W. W. Walker, Grants Pass; F. W. Hollister, Portland, and W. J. M. Milan, of La Grande.

### Ohio—Columbus Clinics

Columbus, Ohio, July 27.—Announcement was made Saturday by directors of the clinic organization that five free dental clinics made possible by contributions received earlier in the year, are to be opened in Columbus, Sept. 1.

They will be located at the School Dental Community House, Godman Building, West Side Settlement House, Children's Hospital and the South Side Settlement House.

The clinics will be in direct charge of Homer W. Castor and John J. Klar, as operators, with

Mrs. Castor and Miss Idabelle Brown as assistants. They will be equipped to care for the dental needs of any children in Columbus, whose parents are not in a financial position to pay for such attention.

The children will be instructed in proper care of the teeth and mouth. Filling, treating and extracting will be included in the regular program of the clinics.

Popular subscriptions to the fund which made the clinics possible, totalled only \$12,-254.47, although the amount sought was \$50,000.

The largest single subscription was \$750, made by the Columbus Dental Manufacturing Co., while contributions of \$500 each were made by S. M. Levy and J. H. Frantz, with a substantial donation being received from the Columbus Dental Society. Two thousand dollars in pennies were contributed by children of Columbus, and \$1,000 was raised by the parents-teachers organizations.

Among organizations actively interested in the success of the undertaking for establishment of dental clinics were the Chamber of Commerce, Columbus Dental Society, Central Philanthropic Council, Federation of Women's Clubs, and the Parent-Teachers' Association.

With the cost of living soaring daily higher, the question of efficiency in production and manufacture has come to the front as the issue of most fundamental importance in the solution of the living problem. It is becoming clear that some remedy must be found for a situation in which thousands of American workers, earnest, respectable men who are doing their best every working day of the week, are nevertheless attaining an output of not over 35% of their best human capacity.

### Arkansas—Fort Smith

Fort Smith, Ark., July 18.—The Fort Smith Dental Society at the annual meeting elected the following officers for the ensuing year: C. T. McKennon, president; A. W. Irving, vice-president; and I. N. Sternberg, secretary and treasurer. A very interesting paper on "Vincent's Angina" was read by D. R. Dorente.

### Montana—State

Butte City, Mont., July 24.—At the annual convention of the State Dental Association, the election of officers resulted in the following: President, S. H. McCauley, Laurel; vice-president, Dr. Crary, Chouteau; second vice-president, Dr. Riley, Missoula; secretary, G. I. Baker, Great Falls; treasurer, Dr. Chase, Great Falls; executive member, Dr. Tackard, Livingston; supervisor of clinics, Dr. Sutphen, Helena.

### New Jersey—State

Atlantic City, July 19.—Administration forces, supported by delegates from virtually all parts of South Jersey, overwhelmed fighting insurgents and retained control of the New Jersey State Dental Society in the closing session of its most exciting convention here yesterday.

## THE DENTAL SUMMARY

John C. Forsyth, of Trenton, secretary for a number of years, was elected president. He defeated Charles F. Jones, of Elizabeth. Dr. Forsyth was supported by George W. Wakeley of Orange, retiring president, and other leaders, who brought about a reorganization within the association some nine years ago. Dr. Jones was vice-president, and, in accord with custom, should have been advanced.

Other officers named were:

Vice-president, S. Irving Callahan, Woodstown; secretary, F. K. Heazelton, Trenton; treasurer, Charles Faupel, Newark, who was unopposed; delegate to the National convention, M. C. Pearce, Orange; trustees, Atlantic County, M. P. Shoemaker; Bergen County, W. A. Tracy; central, R. S. Hopkins; clinical, R. B. Van Gieson; Hudson, Charles Faupel; Mercer, James I. Woolverton; Middlesex, George McLaughlin; Monmouth, Frank L. Manning; Passaic, Charles A. Rice; Plainfield, C. M. F. Egel; southern, William H. Gelston; tri-county, L. R. Fritts; Union, A. Percy Roberts.

These men will be recommended to the Governor for appointments to the state Board of dental examiners: Raymonde A. Albany, of Newark; George M. Holden, Montclair; Benjamin F. Leonard, Plainfield; Arthur R. Slade, Millville; R. B. Van Gissen, Montclair; Walter J. Webster, Jersey City.

During the convention a conference was held with representatives of the child hygiene division of the State Department of Health for the purpose of discussing plans to meet the need of dental clinics, particularly in rural communities. The presiding officer was Dr. Wakeley,

president of the association, and there were present other members of the association.

Need of dental facilities for expectant mothers and children as part of a complete child hygiene program was presented by Julius Levy, director of the division of child hygiene, who asked that the State Dental Society, through advice and co-operation, assist in the solution of the problem.

Agreement was reached that only rural districts and small towns be included in any plans for public clinics which may be worked out for the state. The result of the conference was a unanimous vote that the chair appoint a committee to prepare a tentative program and submit it to the director of the division of child hygiene.

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technique.

### Root Canal Solution and Seal

Formula of Dean H. Clyde Davis,  
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Used with great success in the Col-  
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The solution has all the virtues of  
Chloro-Percha, Callahan's Varnish  
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many of the faults eliminated.

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**FOR SALE**—Largest Advertising Dental Office in Tampa, Florida. Six operating rooms, latest equipment throughout. Operators registered in this state. Doing a cash business of over \$25,000; expenses and rents reasonable. Netting present owner over \$10,000.00 per year. Valid reason for selling furnished interested parties. Price \$7,000.00 on terms of \$3,000.00 cash and \$200.00 per month with interest, or \$6,000.00 spot cash. If you haven't the necessary cash don't answer. Mr. Anderson, Mgr., The S. W. Allen Dental Co., Tampa, Fla., will verify facts as given. Address, R. B. H., Box 777, Tampa, Fla. 930C

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# SAL HEPATICA

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**New York**



# DEATHS

Boston, Mass., July 20.—Funeral services for Dr. John Francis Dowsley, Boston's best known dentist, who died of heart trouble Thursday, were held yesterday morning in Newton Centre.

Dr. Dowsley's almost instant death while on the way to his office was a shock to the dental profession. He numbered the entire dental and medical profession among his personal friends. Scores of prominent public men were among his patients, including former President Grover Cleveland and the late actor, Joseph Jefferson.

The late dentist was a member of the state board of registration in dentistry, from its inception in 1887, serving for twenty years as chairman. He was always an active delegate at meetings of the Northeastern and National Dental Association. In 1914, he went to London as a delegate of the National Dental Association of America.

For years he worked day and night with Thomas A. Forsyth and his brother in the building up of the Forsyth Dental Infirmary. It was at Dr. Dowsley's suggestion that the entire infirmary was given over to the state for free dental work for the soldiers on the way to Mexico, in 1916, and later in the world war.

At Clinton, Iowa, July 24, from hemorrhage of the brain, Dr. Fred Tiesse, Jr., aged 30.

At Rochester, N. Y., July 17, Dr. J. William Graves, aged 60. He was one of the most prominent dentists in the state.

At Catskill, N. Y., July 18, Dr. Charles K. Van Vleck, aged 65.

Scranton, Pa., Aug. 3.—Dr. Eli F. Oust, dentist, dropped dead from heart trouble in his offices in the 100 block of Washington Avenue last night. He had been in apparent good health during the day.

Binghamton, N. Y., Aug. 4.—Dr. Albert D. Turner, an aged wealthy dentist living alone, was found dying in his apartments Saturday afternoon as the result of an attempt on his part to relieve a chronic affection of the bladder without assistance. He had evidently fainted during the operation and was too weak when he revived to summon assistance and it is thought had lain on the floor several days. Money amounting to several hundred dollars and valuable papers were found scattered about the room. He was removed to the City Hospital and died last night. He was 80 years old.

Martinsburg, W. Va., July 18.—Dr. Edgar Lee Smith, one of the most widely known dentists of this section of West Virginia, for a score of years a practicing dentist in Martinsburg, dropped dead on the street here today.

He was aged 56. He was graduated in dentistry at the University of Maryland, in 1887, after which he was appointed to the faculty of that institution, which offer he declined to pursue personal practice. He was a Socialist candidate for Congress in this district several times.

Kansas City, Mo., July 25.—While preparing to attend to the teeth of a patient, Dr. Frank M. Cooper, 42 years old, a dentist with offices at Twenty-seventh street and Indiana Avenue, was stricken with heart failure yesterday afternoon and died within a few minutes.

We announce, with deep regret, the sudden death, on July eighteenth, of Henry A. Curtis, who has been, for twelve years, in charge of our dental depot. Mr. Curtis' duties brought him into active relations with our clientele and associates in the dental trade. He made for himself a secure place in the esteem of all.

THE DENTISTS' SUPPLY COMPANY  
220 West 42nd St., New York.

# IN MEMORIAM

CASUALTIES IN DENTAL DEPARTMENT, U. S. A.  
(From *Oral Hygiene*)

Lt. Lester J. Allison, D.R.C., Iowa City, Iowa, April 20, 1918, Iowa City.

Capt. Melvin M. Augenstein, D. R. C., Hagerstown, Md., Oct. 16, 1918, France, accidental burns.

Lt. Fred A. Ballachy, D.R.C., 450 Elmwood Ave., Buffalo, N. Y., Sept. 26, 1918, Camp Dix, Pneumonia.

Lt. Horace R. Birdsong, D.R.C., Lula, Miss., May 10, 1918, Camp Mills, streptococcus cululitis.

Lt. Vance W. Bliss, D.R.C., Santa Cruz, Calif., Oct., 12, 1918, France, pneumonia.

Lt. Francis E. Boazman, D.R.C., Chappells, S. C., Oct. 19, 1918, Camp Sherman, disease.

Lt. Charles H. Boisseau, D. R. C., Smithton, Pa., Oct. 21, 1918, BH, Camp Upton, pneumonia.

Lt. Ernst L. Casselman, D.R.C., Effingham, Ill., Nov. 5, 1918, Influenza.

Capt. Walter Crandage, D.R.C., 37 Baldwin St., Bridgeport, Conn., Oct. 7, 1918, suicide.

Lt. Oliver W. Davies, D.R.C., 469 Vixel St., Los Angeles, Cal., Nov. 3, 1918, pneumonia.

Lt. Walter P. Desmond, D.R.C., Oct. 6, 1918, killed in action.

Lt. Harry E. Duwe, D.R.C., Arlington, Iowa, Oct. 28, 1918, Arlington, Iowa, influenza.

Lt. Ralph H. Fickes, D.R.C., 118 Grant Ave., Vandergrift, Pa., Oct. 18, 1918, BH, Ft. Ogle, pneumonia.

Lt. Lionel G. Fleming, D. R. C., St. Martinville, La., Oct. 4, 1918, Camp Lee, pneumonia.

Lt. Roland E. Fletcher, D.R.C., 274 N. Fulton Ave., Mt. Vernon, N. Y., Dec. 21, 1918, G. H., Ft. Ogle, empyema.

Lt. Gale Friday, D.R.C., Fremont, Ind., Nov. 14, 1918, Camp Sheridan, pneumonia.

Lt. Roy S. Glass, D.R.C., Frackville, Pa., Oct. 19, 1918, Camp Meade, influenza.

Lt. Clark B. Hannah, D.R.C., General Delivery, Los Angeles, Calif., Oct. 18, 1918, Camp Fremont, pneumonia.

Lt. Roy E. Hanson, D.C., Cambridge Spgs., Pa., Nov. 25, 1918, pneumonia.

Lt. Winfield E. Henshaw, D.C., Peru, Ill., Sept. 28, 1918, pneumonia.

Lt. John C. Higgins, D.R.C., McAdoo, Pa., Oct. 18, 1918, pneumonia.

Lt. Wade H. Hoffman, D.R.C., Oil City, Pa., Oct. 10, 1918, Camp Upton, pneumonia.

## THE DENTAL SUMMARY

Lt. Alexander H. Jones, D.R.C., Youngstown, Ohio, Oct. 1, 1918, France, pneumonia.

Lt. Albert L. Kreitman, D.R.C., New York City, Oct. 4, 1918, Camp Meade, pneumonia.

Lt. Wm. M. Lubitz, D.R.C., 1061 Bergen St., Brooklyn, N. Y., Oct. 11, 1918, Camp Dix, pneumonia.

Lt. Geo. Wm. Mattox, D.R.C., Elberton, Ga., Oct. 15, 1918, France,

Lt. Adrian L. Morin, D.R.C., 616 Baker St., San Francisco, Calif., Oct. 18, 1918, Fremont, Calif., pneumonia.

Lt. Howard M. Morrissey, D.R.C., Kenosha, Wis., Nov. 1, 1918, France, killed in action.

Lt. Will C. Niles, D.R.C., 101 Vernon St., Newton, Mass., Oct. 4, 1918, Brigham Hospital, Boston.

Lt. Joseph H. Parsons, D.R.C., 1019 W. 10th St., Erie, Pa., Oct. 4, 1918, France, Killed in action.

Lt. Loy A. Patterson, D.R.C., Hennessey, Okla., July 19, 1918, Camp Beauregard, cerebro-meningitis.

Maj. Merton M. Postle, D.R.C., 416 W. 77th St., Chicago, Ill., Oct. 15, 1918, Camp Kearney, pneumonia.

Lt. Francis R. Simm, D.R.C., Pierre, S. D., Oct. 7, 1918, Fort Oglethorp, pneumonia.

Lt. Cecil C. Smith, D.R.C., Violet Hill, Ark., Oct. 18, 1918, Camp Travis, pneumonia.

Lt. Bernard F. Staples, D.R.C., 454 Mass. Ave., Boston, Mass., Sept. 24, 1918, Camp Devens, Pneumonia.

Lt. Delmar H. Stocker, D.R.C., Tunkhannock, Pa., Oct. 3, 1918, France, killed in railroad accident.

Lt. Leslie P. Ambelang, D.R.C., Cascade, Wis., Aug. 6, 1918, France, killed in action.

Lt. Carl R. Henry, D.R.C., Cuba, Ill., Sept. 4, 1917.

Lt. Lloyd A. Osborne, D.R.C., Fremont, Iowa, July 24, 1918, Fremont, Iowa, drowned.

Lt. Walter O. Reinhard, D.R.C., Rio, Wis., Oct. 3, 1918, Camp Custer, pneumonia.

Lt. Col. Mortimer Sandehson, D.C., July 30, 1918, Camp Cody, Septicæmia.

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# Thirtieth Annual Meeting Northern Indiana Dental Society

New Kirby Hotel, Muncie, Ind.

September 10th and 11th, 1919

No Convention Last Year.

Let's Double Up THIS Year



Capt. Harrison B. Wall, D.R.C., 15605 Detroit Ave., Cleveland, Ohio, March 28, 1918, Camp Custer, peritonitis.

Lt. Raymond M. Weidert, D.R.C., Wilcox, Pa., Nov. 7, 1918, influenza-pneumonia.

Lt. Edwin B. Zwink, D.R.C., Eustis, Neb., Nov. 7, 1918, Camp Cody, pneumonia.

Lt. Raymond A. Walker, D.R.C., 285 Orchard St., New Haven, Conn., Sept. 28, 1918, Camp Devens, pneumonia.

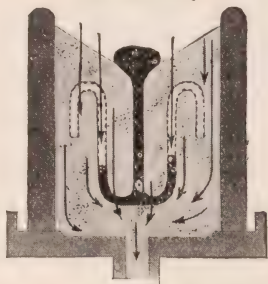
Lt. Alfred G. Wald, D.R.C., Huntington, Pa., Oct. 15, 1918, France, killed in action.

Lt. Alexander D. Baris, D.R.C., Brooklyn, N. Y., Feb. 28, 1918, A. E. F., meningitis.

# The Laing-Elgin Method

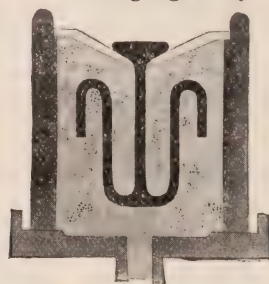
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CLEVELAND COLUMBUS AKRON FLINT DETROIT GRAND RAPIDS

Lt. Frank S. Leonard, D.R.C., 914 North Meridan St., Indianapolis, Ind., Jan. 31, 1919, A. E. F., pneumonia.

Lt. Frank E. McNett, D.R.C., La Crosse, Wis., Dec. 18, 1918, G.H. No. 14, pneumonia.

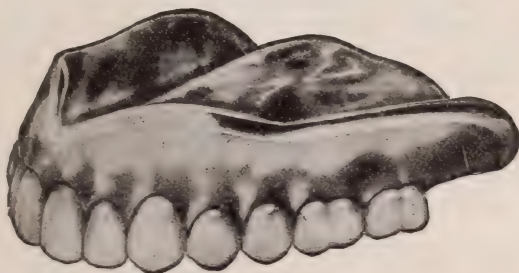
Lt. Samuel F. Moffett, D.R.C., Cottello, Texas, Jan. 6, 1918, Ft. Bliss, septicæmia.

First Lt. John S. Simons, D.R.C., Henderson, Minn., Oct. 2, 1918, Camp Tobyhanna, pneumonia.

Lt. Leslie A. Stone, D.R.C., Pittsfield, Mass., Oct. 17, 1918, A.E.F., killed in action.

Capt. Earl P. Jones, D.R.C., Mansfield, Ohio, March 3, 1919, A. E. F., pneumonia.

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They have even realized the dream of *tempered gold*, several of the alloys possessing the property of being tempered to a remarkable degree, and therefore proving invaluable to the Orthodontist as well as the Prosthodontist.

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NEY-ORO Casting Gold "B"	NEY-ORO Gold Plate	No. 2
NEY-ORO Casting Gold "C"	NEY-ORO Gold Plate	No. 3
NEY-ORO Casting Gold "D"	NEY-ORO Gold Solder	No. 68
NEY-ORO Casting Gold "E"	NEY-ORO Gold Solder	No. 76
NEY-ORO Elastic Gold	NEY-ORO Gold Solder	No. 84

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NEY-ORO Tubes for Orthodontia	

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Ney's Golds and Solders, "Best Since 1812," and Ney-Aloy, sold by all good Supply Houses. If your dealer cannot supply you, write to us.

# REGULAR CONTRIBUTIONS

## THE DENTAL SUMMARY

THE MAGAZINE THAT HELPS

Vol. XXXIX

October, 1919

No. 10

### DISEASES AND TREATMENT OF THE PERIDONTAL MEMBRANE; PREVENTIVE TREATMENT OF CHRONIC INFECTIONS INVOLVING THE ALVEOLAR PROCESSES; RELATION OF CHRONIC MOUTH FOCI TO SYSTEMIC CONDITIONS\*

BY ARTHUR D. BLACK, A.M., M.D., D.D.S., F.A.C.S., CHICAGO

I AM VERY GLAD to have another opportunity to meet with you and to discuss some of the problems in which we are all interested. I am to give three lectures during the meeting. In the first, I wish to present the changes which take place in the peridental tissues as a result of chronic infections and to report certain things that have been learned regarding the changes in these tissues during the past year. Following this I will make some suggestions relative to methods of treatment.

Today we will confine our attention to pus pockets along the sides of the roots of the teeth. In the second lecture we will take up the question of the prevention of the two types of chronic infections which we find about the teeth—the pus pocket and the chronic alveolar abscess. In connection with that presentation I will make certain suggestions relative to the study of conditions of the pulp and of root-canal fillings and their sequela which will, I hope, form the basis of some work by your district organizations during the coming year. I am sure you will appreciate the need of this study.

In the third lecture I will present a brief review of the present situation of focal infections in relation to systemic diseases as I see it, paying especial attention to the chronic infections about the teeth. It appears that many physicians and dentists are overlooking the fact that there are many other areas of focal infection in the body besides those around the teeth.

We will review studies of diseased peridental membrane which have been made, particularly in the research laboratories of the dental depart-

\*A series of three lectures delivered before the Post-graduate meeting of the Kansas State Dental Society, Topeka, April, 1919.



ment of the University of Illinois and of Northwestern University Dental School. First, I will refer very briefly to work that has been done by Dr. Frederick B. Noyes, in the dental department of the University of Illinois, in demonstrating the lymphatic vessels which drain the pulp and peridental membranes. In the study of lymphatic tissues we should remember the general principle upon which the lymphatics function. Serum is delivered to all of the connective tissues from the minute capillaries of the blood system and this serum gradually is drawn into lymph spaces and lymph channels and finally carried away through the lymphatic system. The lymphatics constitute a drainage system for the connective tissues. We may say that no connective tissue is without its lymphatic drainage. However, it wasn't until Dr. Noyes had carried out these studies that we were able to say positively that lymphatics drained both the peridental membrane and the pulp tissue. As lymph is often a carrier of infection, it is important that we know the route of travel of the lymph in order to understand the progress of infection. We must first note the direction of the blood vessels within the peridental membrane, because we will see later that the lymphatics accompany the blood vessels.



Fig. 1

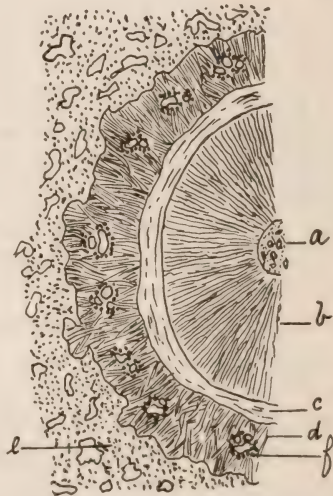


Fig. 2

Fig. 1.—Diagrammatic sketch of a longitudinal section through a tooth, peridental membrane, alveolar process and gum tissue, illustrating three sources of blood supply to the peridental membrane. *a*. Blood vessel arching over crest of alveolar process and passing down through peridental membrane. *b*. Blood vessel entering apical region and subdividing, one branch passing into the pulp, others into the peridental membrane. *c*. Blood vessels passing through alveolar process to the peridental membrane. *d, d*. Blood vessels within the peridental membrane. These vessels usually are parallel to the long axis of the tooth, and about half way between the cementum and alveolar wall.

Fig. 2.—Diagrammatic sketch of a cross section through the root of a tooth, peridental membrane and alveolar process. *a*. Pulp, *b*. Dentin, *c*. Cementum, *d*. Peridental Membrane, *e*. Alveolar process, *f*. Blood Vessels cut transversely; the black dots surrounding the blood vessels represent the minute lymphatics attached to the vessel walls—the perivascular lymphatics.

I have made two sketches, *Figs. 1 and 2*; one a lengthwise section through the root of a tooth and its adjacent peridental membrane, alveolar process and gum tissue; the other a cross section. I call your attention to the fact that the blood supply of the peridental membrane is three-fold. Vessels pass through the gum tissue on the outside of the bone of the alveolar process, arching over the crest of the process and then through the peridental membrane toward the apex of the root. A second source of supply is from one or more vessels which enter the peridental membrane about the apex of the root and split up into six or more branches which pass toward the crown of the tooth. The third group consists of vessels which pass through the bone of the alveolar process from the outer surface to the peridental membrane on the inner surface. In the main the direction of all of these blood vessels within the peridental membrane is parallel to the long axis of the root. In a cross section of the tooth root and attached tissues these vessels are cut transversely.

Dr. Noyes has demonstrated beyond question the fact that there are minute lymphatic vessels attached to the surface of all of these larger blood vessels in the peridental membrane. He also has demonstrated that there are similar lymphatic vessels within the pulp tissue.<sup>1</sup> This work of Dr. Noyes' is important in our studies of pathology because it indicates clearly that an infection which involves the gingivæ and the tissue about the neck of the tooth naturally would be carried by the lymphatic vessels which drain that region and pass along within the peridental membrane toward the apex of the root. It now seems certain that infections starting in the region of the gingiva, and particularly that portion of the gingiva immediately overlying the enamel of the tooth, do travel along these perivascular lymphatics in the peridental membrane. It is rather interesting to note that those infections which are caused by deposits of salivary calculus do not travel down through the lymphatic vessels of the peridental membrane, but along the lymphatics attached to the walls of the vessels on the outside of the alveolar process. This explains the clinical observation that deposits of salivary calculus do not, as a rule, cause the formation of pus pockets. If you will examine cases after you have removed deposits of salivary calculus, you will note that, in the large majority, a thin blade can not be passed between the remaining soft tissue and the root; there is no pocket.

We would say, purely on the basis of the studies of the lymphatics, that we would expect infections involving the gingivæ to travel along the lymphatics attached to the walls of the blood vessels in the peridental membrane. The fact that most of these vessels run parallel to the long axis of the tooth explains the clinical observation that pus

<sup>1</sup>The Lymphatics of the Dental Region, *Journal American Medical Association*, Oct. 12, 1918.



pockets incline to get deep faster than they spread sidewise around the root of the tooth. If the majority of the vessels encircled the tooth, the infection would be carried around the root more rapidly than toward the apex, and the pockets would be broad and shallow, rather than narrow and deep in their earlier stage.

In brief, Dr. Noyes' experiments were as follows: A number of dogs were used, and while anesthetized, holes were drilled into the pulp chambers of the first molars and the canines above and below in a number of animals and a solution of Prussian blue in oil of turpentine gradually was pumped into the pulp tissue. In other dogs a needle was inserted into the gum tissue and the solution pumped in. The dogs were then killed and the tissues dissected to expose those containing the solution. It was demonstrated that the Prussian blue solution had followed a definite lymphatic system, draining not only the pulp, but also the gingivæ and the peridental membrane. The Prussian blue was followed from these tissues throughout the infra-orbital and mandibular

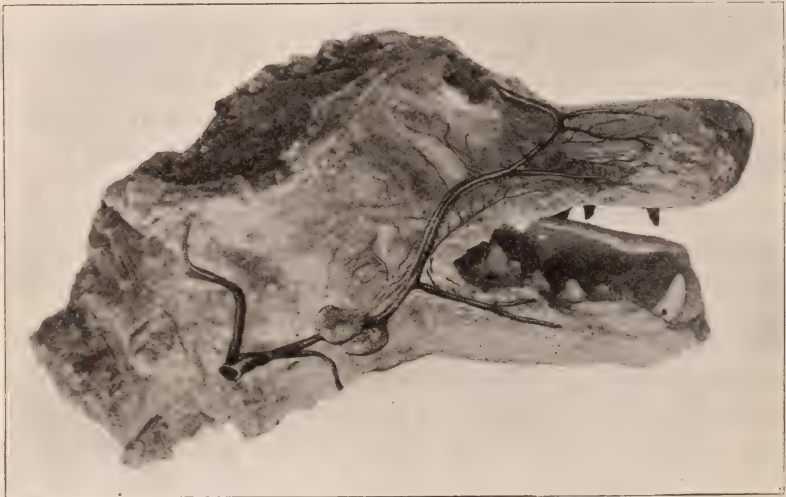


Fig. 3.—Drawing of dog's head showing injected lymph vessels from the infra-orbital and mental foramina to the submaxillary lymph nodes.—Noyes.

canals and on to the cervical glands. (*Fig. 3.*) I consider this one of the most important researches made for the dental profession in recent years.

In considering the pathological changes in the peridental membrane it is necessary to have in mind the normal structure. In a longitudinal section through gum, bone, peridental membrane and tooth, we note the dense layer of epithelium of the exposed surface of the gingivæ, which affords protection to all of the underlying structures. The epithelium lining the free surface of the gingivæ, which lies against the enamel, is less compact, and offers less resistance to infection. Deeper

down the solid mass of fibres of the peridental membrane attached to the cementum pass out into the gingivæ or to the bone of the alveolar process. Lying upon the surface of the cementum, between the ends of the fibres, are the cementoblasts, which are the source of vitality for the cementum. Coursing through the peridental membrane, for the most part parallel to the long axis of the root, and situated about mid-way between the cementum and the alveolar process are possibly a dozen nerve and blood vessel groups. To the outer walls of these blood vessels and nerves are attached the minute chains of lymphatics which drain the gingivæ, the movement of the lymph being in the direction of the apex. These lymphatics follow along the blood vessel routes and empty into cervical glands. (*Figs. 1 and 3.*)

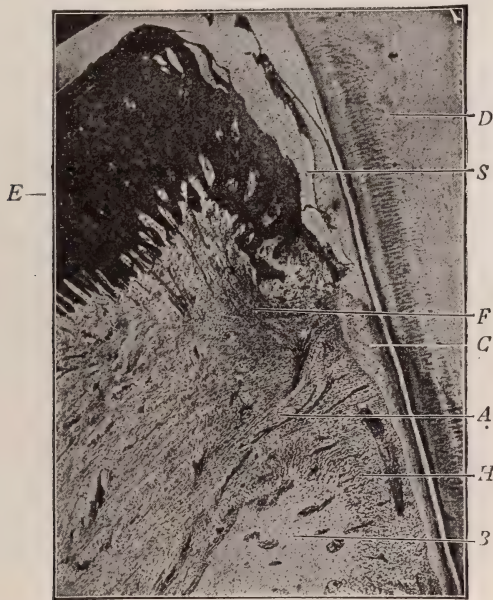


Fig. 4.—Longitudinal bucco-lingual section through root of tooth and gingival portion of investing tissue showing fibers of the peridental membrane. *e.* Epithelium. *d.* Dentin. *c.* Cementum. *s.* Subgingival Space. *f.* Free gingivæ group of fibers. *a.* Alveolar crest of fibers. *h.* Horizontal group of fibers. *b.* Bone of alveolar process. —Noyes.

With this understanding of the normal structure it is easy to follow the pathological changes. First, there is an irritation of the gingivæ, usually long continued or often repeated, which makes possible the invasion of this tissue by micro-organisms commonly present in the mouth. In considering the infections of the gingivæ, especially by organisms of low virulence which cause chronic infections, the peculiar structure of the gingivæ must be remembered. This tissue is extremely well adapted to resist infection, both on account of the compactness of the epithelial cells, and because of its excellent blood supply, and it often will with-



stand constant or oft-repeated irritation for months or even years without serious invasion by infection. Doubtless the general condition of health, the age, etc. of the individual have a direct bearing upon the resistance of the gingivæ. Because of the fact that periodontal disease in no case appears to begin elsewhere than in the gingivæ, must we conclude that the whole question of local and systemic causes of chronic pericementitis really becomes a question of the effect of either the local irritation or the systemic condition, or both, upon the resistance of the gingivæ to infection. When in reasonably normal condition, the gingivæ will successfully resist invasion by those organisms which cause chronic infections. Only as a result of long continued or often repeated punishment, or of systemic derangement, do the gingivæ become seriously involved. It is this quality of resistance of the gingivæ, constituting its most important function of protection to the periodontal membrane, which gives the dental profession the opportunity to apply preventive treatment successfully. We will refer to this again in the next lecture.

Infection being established within the gingivæ, it gradually involves more or less tissue, as the balance of virulence of infection and tissue resistance varies. The minute lymphatics take up a share of the infection and it is carried with the movement of the lymph along the perivascular lymphatics, which, as Dr. Noyes has demonstrated, are attached to the walls of the vessels coursing through the periodontal membrane, towards the apex of the root. The effect of the infection within these lymph vessels is two-fold; there is a thickening of the walls of the blood vessels which are surrounded by the infection, and an accumulation of round cells from the neighboring tissue to wall off the infection. Eventually the periodontal membrane immediately surrounding the blood vessel will be destroyed for a little space. Fibres are cut leaving a portion attached to the cementum and a portion attached to the bone of the socket. If the same process is going on about a number of vessels running parallel to each other, there eventually occurs a definite break—a pocket—in the periodontal membrane. At the time, the cementum is covered by short ends of fibers, but owing to the fact that the blood supply is largely cut off, and also to the exposure of this connective tissue to infection, it soon dies, leaving the cementum denuded.

As has been stated, the direction of progress of this destructive process is naturally along the routes of the lymphatics, parallel to the long axis of the root. Therefore pockets progress in depth more rapidly than in width. This corresponds with clinical evidence. It also explains the fact that in cases of chronic alveolar abscess there is not a similar pocket formed in the direction of the crown of the tooth, since the movement of the lymph is from the gingivæ toward the apex, and infection is carried with, rather than against, the movement of the lymph.

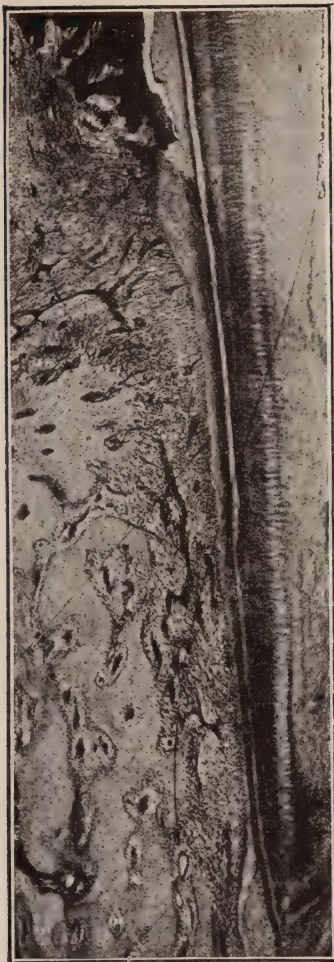


Fig. 5



Fig. 6

Fig. 5.—Normal periodontal membrane. Section showing fibers attached to the cementum from the gingival line almost to the apex of the root. The section is not quite parallel with the long axis of the tooth and is a little to one side of the apex of the root. The fibers which pass upward into the gingivæ, those which pass to the crest of the alveolar process, and those which pass directly from the cementum to the bone are clearly shown as a practically solid mass from the gingival line to the end of the root. A blood vessel is shown arching over the crest of the alveolar process, others may be seen within the periodontal membrane, their course being parallel to the long axis of the root. —G. V. Black.

Fig. 6.—Section through root and labial alveolar process of an upper central incisor, showing about one-fourth of the root close to the apex. Patient forty years of age. The periodontal membrane on the lingual side of this tooth was detached almost to the apex and the pocket extended around on both the mesial and distal sides of the root, but was not so deep on either the mesial or distal, as on the lingual. One band of good periodontal membrane fibers is shown near the bottom of the illustration; higher up (towards the gingiva) much degeneration of the periodontal membrane has taken place, although many bundles of short fibers remain attached to the cementum. The general trend of the blood vessels is apparent. This illustrates the destructive changes which occur within the periodontal membrane in advance of the actual break or formation of a pocket.



Next we will consider the changes which take place in the tissues forming the outer wall of the pocket. The ends of fibres of the periodontal membrane which are attached to the bone of the alveolar process gradually disappear, as does the corresponding area of bone. The destruction of this tissue—both the fibres and the bone—is likely a combined pathological and physiological process; the infective process doubtless plays a part, yet it must be remembered that there would be a physiological absorption, corresponding to that which takes place following the extraction of a tooth. So far as the area involved is concerned, the break in the periodontal membrane should have the same effect as the extraction of the tooth. Thus the overlying bone and soft connective tissue gradually is changed to one that varies from a connective tissue of ordinary type to a highly-inflamed granulation tissue, the blood vessels of which have thin walls, easily penetrated by micro-organisms. Finally we turn to the denuded cementum, now a dead tissue, because the cementoblasts which maintained its vitality have been destroyed. The cementum, being a porous tissue, has absorbed the products of the suppurative process. It is in the same condition as the denuded cementum of the root apex in a case of chronic alveolar abscess. There is no reason to expect a reattachment of the overlying soft tissue to the root under any circumstances. Not only have those tissue elements necessary to a normal reattachment been destroyed, but the pus-soaked condition of the cementum precludes the possibility of an attachment such as occurs when teeth are replanted.

In a case of replantation there is an attachment of the tissues to the surface of the root, not by the formation of a periodontal membrane, but by a process in connection with which there is absorption of the root; the absorption continuing until the tooth becomes loose and must be removed.

If a tooth to be implanted is immersed in almost any antiseptic solution, there will occur no attachment, because the cementum will have absorbed enough of the antiseptic to have made that root non-chemotactic to the surrounding tissue. It repels the soft tissue cells instead of attracting them<sup>2</sup>. The pus-soaked cementum does the same.

All of these things have led us not to expect a reattachment of the overlying soft tissue to the surface of the root. Therefore we have made it a basis of practice in the handling of these cases to start out with the belief firmly fixed that a reattachment of the tissue to the surface of the root may not be attained. That enables us to lay our plans of procedure on definite lines. In making this statement I fully appreciate the fact that a good many believe they have had cases in which, as a result of whatever treatment they have employed, a reattachment of the tissue to the surface of the root has occurred. It should be recognized that with most any kind of treatment of these pockets the loose

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<sup>2</sup>Special Dental Pathology, by G. V. Black, p. 149.

teeth will get tighter as the inflammation of the tissues is reduced, and we are led to believe there has been a reattachment. During the inflammatory stage the fibres which are still attached have not exerted their normal pull on the root. Therefore the tooth has an undue amount of motion. As a result of treatment and the reduction of the inflammation the attached fibres again become taut and hold the tooth more firmly. The fact that the tooth is tighter does not indicate reattachment of fibres, but rather improved tone of the undetached fibres.

With this as a basis for treatment I have selected in my practice numbers of cases in which reinfection of pockets can be prevented by cutting away the overlying tissue. There are some cases in which this should not be done. It isn't a panacea in the way of treatment, but it may be employed in a good many cases. I see such patients but two or three times and then I am through with them for at least a six-months' period.

In considering the treatment of a particular case, the teeth may be divided into three groups: *First*, those to be extracted; *second*, those which are to be treated more or less by the methods which are generally in vogue, mostly shallow pockets which may be kept clean by co-operation of dentist and patient; *third*, teeth having pockets which are not deep enough to justify extraction and yet too deep to permit of favorable prognosis under the ordinary palliative treatment. For this group I cut away the overlying gum tissue, thus eliminating the pockets entirely.

We might divide the cases in which this operation may be employed into three groups, the technic varying slightly for each: *First*, those in which there are pockets on labial or lingual surfaces; *second*, those in which there are proximal pockets; *third*, those in which there are pockets that entirely surround a considerable number—possibly all of the teeth and are likely to be of tolerably even depth.

In making this classification we have an idea in each case as to the most frequent cause of the particular condition, as well as the difference in the technic of removing the tissue. Labial and lingual pockets usually are due to injuries of the gingiva on those surfaces by margins of fillings or crowns or deposits of serumal calculus. In those cases in which there are proximal pockets, the cause is usually a lack of proper contact. In cases in which there is a general destruction about a number of teeth, the cause is generally deposits of serumal calculus, which have formed a band encircling each tooth.

I have made a series of nine sketches to illustrate the technic of the operation for eliminating proximal pockets. These show the principles involved in the elimination of almost any pocket, other operations being more simple than the one illustrated. The operation is performed under novocain anesthesia. *Fig. 7* is a sketch of the lower front teeth; a line indicates the position of the margin of the gum which, in this case,



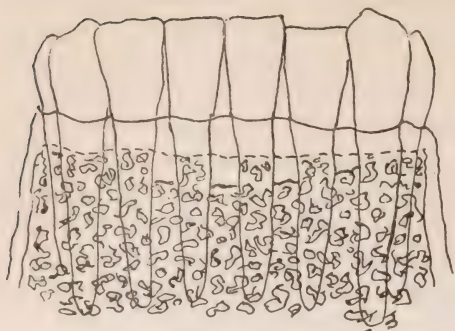


Fig. 7



Fig. 8

Fig. 7.—Sketch of the lower front teeth, labial view. There are interproximal pockets between the incisors, also between the left lateral incisor and cuspid. A line indicates the position of the crest of the gingivæ. The broken line indicates the crest of the bone. The depth to which the interproximal bone has been destroyed also is shown.

Fig. 8.—Sketch of one of the lower incisors shown in Fig. 7, proximal view. The interproximal pocket, with the destruction of the central portion of the bone, is shown, with the labial and lingual portions of the process about normal height. To eliminate such a pocket it is clearly necessary to cut away the gum tissue and bone on the labial and lingual at least to the level of the interproximal bone.

has receded very materially. The dotted line represents the line of the bone on the labial surface of these roots and the deeper lines between the teeth indicate the depth to which the interproximal bone has been destroyed.

Fig. 8 shows a labio-lingual section through the bone. It will be noticed that the line of the soft tissue in between these two teeth is concave as a result of its gradual destruction. The soft tissue and the bone on the labial and lingual surface stands up higher than it does between

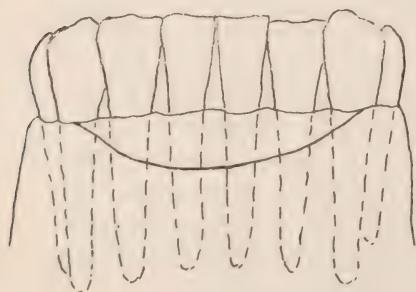


Fig. 9

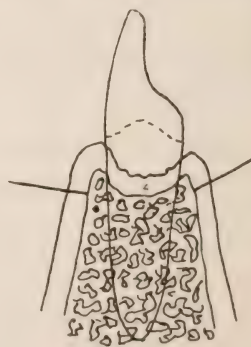


Fig. 10

Fig. 9.—First incision in operation to eliminate pockets. This is a curved line from cuspid to cuspid, the intention being to remove all of the soft tissue and bone to the incisal of this incision. Novocain is injected and the incision made with a small straight knife on the labial side. A similar incision is made on the lingual side with a knife having a blade set at an angle of about forty-five degrees to the handle.

Fig. 10.—Proximal view, showing position of labial and lingual incisions in relation to depth of interproximal pockets.

the two teeth. This is almost the universal type present where the destruction is because of a faulty contact. I think it is quite clear that this can not be made a self-cleaning area by simply scooping out the infected tissue between the teeth; but that it will be necessary to cut away the bone and soft tissue to the labial and lingual, at least to the level of the interproximal injury.

*Fig. 9* shows the labial incision in this operation, which follows in a graceful curved line, as deep as the pockets between the several teeth. This incision is made with a small straight knife on the labial side, and a blade set at a convenient angle to the handle is used to make a similar incision on the lingual side.

*Fig. 10* shows the lines of the incisions on the labial and lingual sides through the soft tissue to the bone.



Fig. 11

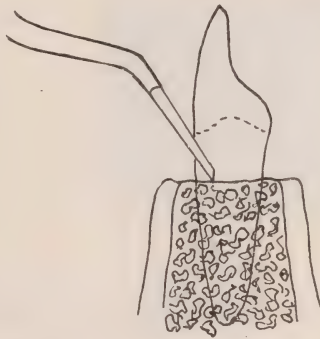


Fig. 12

*Fig. 11.*—Proximal view showing large chisel (20-9-6 Black's formula) with cutting edge placed in previously-made incision. Chisel is forced through bone to root; this is repeated several times for each tooth until all of the bone is cut through. Then with a scraping motion in the incisal direction, the bone and soft tissue are removed. This is repeated for each tooth. Sometimes the same chisel may be used on the lingual, or an instrument having a greater angle of blade may be more convenient.

*Fig. 12.*—A chisel of suitable size is carried through each interproximal space to remove any unhealthy granulation tissue which may remain in the central portion. Usually a little of the crest of the bone is cut away.

*Fig. 11* shows a simple method of cutting through the process and peridental membrane. A chisel is placed in the incision and forced directly through the bone until it comes in contact with the surface of the root, then with a movement in the incisal direction, the gum, bone and peridental membrane are detached from the surface of the root. This is done all the way along both labial and lingual surfaces, following the lines of the incisions as indicated in *Fig. 9*.

*Fig. 12* illustrates the position of a chisel which is carried across the bone in the central portion, cutting away any soft granulation which may remain and scraping the surface of the bone itself, leaving the crest of the bone on a horizontal line or slightly convex from labial to lingual.



*Fig. 13* shows the final trimming of the crest of the bone on both the labial and lingual, in order that it may certainly be covered by the margin of the gum. If the margin of the bone should be left exposed, it would become necrosed and be gradually thrown off, the mouth being quite sore in the meantime. Healing may be accelerated by trimming this bone to a line a little below the margin of the soft tissue, so that the soft tissue will have a better opportunity to lap over and cover the bone. This cutting of the bone may be done either with a fissure bur or a chisel. If a fissure bur is used, the end blades should be ground off so that the end may be held against the root without cutting the root. I usually prefer a chisel, which may be held parallel to the length of the root. The bone may be removed very easily as it usually is soft and not difficult to cut.

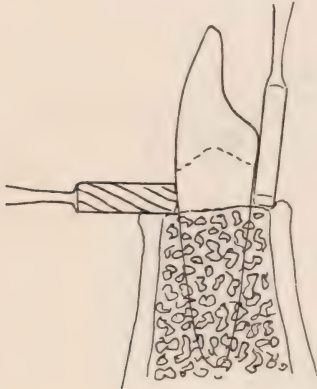


Fig. 13

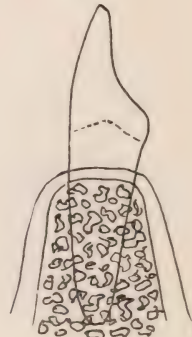


Fig. 14

*Fig. 13.*—This illustrates two methods of trimming the crest of the bone on the labial and lingual sides of the teeth. This bone should be cut a little shorter than the proximal bone; it should be trimmed sufficiently to permit the cut edge of gum tissue to overlap a little. This facilitates the building of new epithelium over the bone. A fissure bur, used as indicated, should have a non-cutting end. The end blades may be ground off of an ordinary fissure bur.

*Fig. 14.*—The proximal view about two weeks after the operation, showing growth of epithelium covering the bone.

*Fig. 14* shows the result of such an operation after the epithelium has formed a covering for the bone, the tissue occupying the interproximal space being convex from labial to lingual.

*Fig. 15* shows the labial view of such a case after it has healed. There are wide open spaces between the teeth. The epithelium will have grown through each one of these spaces to give a good, tough, mucous membrane and the pockets have been eliminated.

The after treatment of these cases consists of very thorough irrigation with warm salt water until the hemorrhage is stopped and all blood clot is removed. The patient is then instructed to rinse the mouth very thoroughly with salt solution every two hours during the remainder of

the day of the operation, and immediately after each meal on subsequent days until the gums have healed so that a tooth brush may be used.

Occasionally, in cases in which much of the cementum is exposed, the teeth will be sensitive to thermal shock for a few days. In only one case in my experience has the sensitiveness required treatment. In that case silver nitrate was applied with satisfactory result.

New epithelium will cover over the cut surface within a few days, but it usually will require three or four weeks for this newly-formed tissue to become firm, so that it may be brushed vigorously without being painful or without bleeding.

If the gums are very badly inflamed I would, as a rule, attempt to reduce the inflammation before operating. That can be done by removing the deposits and irrigating the pockets with warm salt solution.

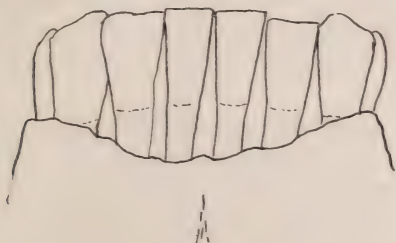


Fig. 15

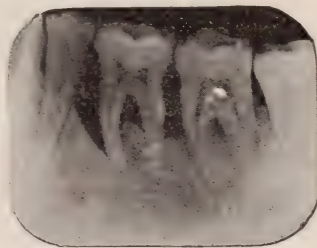


Fig. 16

Fig. 15.—Labial view of case after operation. All pockets have been eliminated. The wide open interproximal spaces may be kept clean by rinsing the mouth thoroughly with water after each meal.

Fig. 16.—Reproduction of radiograph showing funnel-shaped destruction of bone in the formation of the pus pocket. This is best shown to the mesial of the first molar.

If there is a single deep pocket on the labial, buccal or lingual to be cut away, and the tissue is removed in the shape of the pocket, it will grow over in a very short time and re-form the pocket. In such cases it is necessary to cut a little farther to either side, making the line of the incision a gradual curve rather than a deep notch. Labial or buccal pockets alongside the roots of several teeth require the very simple operation of cutting away the detached tissue and trimming the edge of the bone. They usually heal very promptly.

In those cases in which there are pockets entirely surrounding the teeth, the operation consists in cutting away all of the soft tissue down to the crest of the bone of the alveolar process, and afterwards trimming away a little of the edge of the bone. We should remember that the destruction of the periodontal membrane is a little in advance of the destruction of the bone of the alveolar process and it is therefore necessary to cut away the edge of the bone in order to eliminate the pocket. (Fig. 16.)

It is my intention to show by clinic this one method of treatment, which is a modification of the method Dr. Riggs gave the profession



before many of us were born. Please understand that I have no thought of presenting this as a substitute for many other very good means we have at hand for handling these conditions. There are many cases in which pockets are shallow and can be handled better without cutting away the soft tissues.

I think we ought to keep in mind the fact that pockets in any position that can be kept clean are practically safe, so far as systemic infection is concerned. It is just a question of how they can be kept clean. Many shallow pockets may be kept clean by the patient, by irrigation with a rubber syringe twice a day, and if the dentist sees these cases often enough to find and remove deposits promptly and maintain proper contacts, it is often the best method of treatment. Of the cases with very deep pockets, the profession as a whole is carrying too many along after they have reached the hopeless state. We will serve our patients better if we make more careful examinations and pick out the bad teeth early and oftentimes save the rest of the denture, rather than to let the whole denture gradually go to ruin.

I would like to say, in conclusion, that the time has gone past when we are justified in treating these cases on the basis of whether or not the teeth can be kept comfortable for mastication. That used to be the principle of practice. If a tooth became sore once in a while and recovered, we thought nothing of it. Today I believe that such practice is not right because we should give first consideration to the systemic danger which these cases present and we must weigh, many times, the one thing against the other—the value of the teeth in mastication against the menace they present to the health of the individual. As we study these cases, more of us will realize that as pockets get deep, we must extract more teeth than the majority of us have been extracting. I know a few have gone very much to the opposite extreme and are extracting many teeth which ought not to be extracted. We ought to extract on the basis of whether or not we are successful in preventing reinfection in the pockets.

If, as a result of careful examinations and a knowledge of the recent studies of the pathology, we can come to recognize, each one for ourselves, that we are not trying to get a reattachment of the tissue, but are determined to prevent the continual reinfection, we will be on a much more sound basis for the handling of these cases than we have been heretofore.

## SECOND LECTURE

PREVENTIVE TREATMENT OF CHRONIC INFECTIONS  
INVOLVING THE ALVEOLAR PROCESSES

We are to discuss this morning some questions of prevention in dentistry. In this connection it might not be out of place for us to recall the trend of thought which has been in the minds of almost everyone as a result of the war, the trend of thought along the line of prevention. That is what the League of Nations is supposed to be for. The idea of prevention of war was, of course, the fundamental idea upon which the scheme of the League of Nations was based.

There also has come the development of the idea of prevention in medicine and in dentistry as never before. One of the most difficult things in medicine, as in almost any other line of endeavor, is to develop the idea of preventive procedure. Many have been critical of the attitude of our government for its lack of preparedness, which might have meant prevention, before we went into the war. Probably all of us realize now that we should have been better prepared. On the other hand there always has been the question of how the administration would have succeeded had it tried to do the things in the matter of preparedness before we went into the war that were done afterwards. Take for instance, the question of the draft. Would it have been possible for our country to have put through the draft in anticipation of our entry into the war? I doubt it. Likewise, would it have been possible to sell several billions of Liberty Bonds previous to the declaration of war? I doubt if this country would have stood for the expense necessary to have developed adequate preparedness.

In medicine, as well as in the larger matters of state and war, it has been difficult to interest people in preventive measures; to interest them to the point where they will become active in behalf of some measure of prevention. A person who is quite well hesitates to spend his money for the prevention of disease. He is too busy doing something else. He is, however, quite anxious to see the doctor when he is acutely sick.

As a result of the war, the idea of prevention seems to have come into the minds of our people in such a way that we can make use of it to advantage in medicine and dentistry as we never could before. The lesson in medicine has been learned by actual experience by millions of men from every walk of life and from every community, and is becoming known to other millions through contact with the men who have been in service, as well as from the published records of the Surgeon General's office.

Take, for example, the government's figures on typhoid fever. In the Spanish-American War, with the small army we had, there were



about thirteen thousand deaths from typhoid fever, while in our World War army, in which there has been an average of more than three million men in the camps both in France and America, up to the first of March there were but one hundred and sixty deaths of typhoid fever. That is a remarkable achievement, and a wonderful lesson in preventive medicine. Vaccination against smallpox resulted in there being practically none in the army; the control of venereal disease reduced the percentage in our army far below what it ever was in our civilian population.

Almost every family has been interested directly or through close association, in men who have been in service. These men have learned a lesson in prevention, and their families and friends have or will learn it from them. It is quite possible that within the next decade, the practice of medicine will be so changed that it will be very common for people to see the physician while they are well, in order that they may keep well, instead of calling the doctor only when sick. If there should be that development in medicine, there should be a similar development in dentistry. In fact a considerable number of our people are today visiting the dentist at regular intervals with this idea of prevention in mind.

We are concerned chiefly today in the study of the problems of focal infection within the mouth—with two groups of infection—chronic alveolar abscess and the pus pocket alongside the root of the tooth.

It is perfectly obvious to anyone studying the pathology of these two conditions that we do not have the development of the chronic alveolar abscess except as a sequela of the death of the pulp of the tooth, and it is equally obvious that we do not have the development of the pus pocket alongside the root of the tooth without having an original break in the gingiva. Therefore, as we take up the question of prevention of these two groups of conditions, we need to look at those causes which result in the death of the pulp and those which result in infections of the gingivæ. We likewise wish to know what may occur from the time a pulp dies or is removed that causes the abscess; also the changes which take place in the peridental membrane.

If teeth are watched with sufficient care that cavities may be found while small and thus keep the enamel of the tooth intact, or at least prevent deep involvement of the dentin, death of the pulp will be prevented. That we have not succeeded very well in doing this is evidenced by the fact that very few people grow up to adult life without having the pulps of one or more of their teeth removed and yet, if we are to advance in the matter of prevention of chronic alveolar abscess, my belief is that our principal gain must be by prevention of the involvement of the pulp, rather than by improvement in the technic of handling root canals, although a very material reduction in the number of abscesses is certain as a result of more careful root-canal technic.

We ought to destroy fewer pulps. We will be able to do so, principally as a result of better education of people to the need of close care of their teeth. It is necessary that each of us educate our patients to the need of preventive dentistry, so that they will be willing to return as often as we wish to see them. Then it will be our duty to make such careful examinations of mouths that we will, in the large majority of cases, catch the decays when they are so small that we may make filling operations without the pulps being involved. In this the better practitioners are today making good progress.

With the peridental membrane, I think we haven't fixed in our minds the parallelism of these infections and their occurrence in the way we should in relation to the other group resulting from the death of the pulp. We all have appreciated the fact that the enamel is the real protective tissue against involvement of the dental pulp. We ought to look upon the very tough structure of the gingivæ in exactly the same relation to the peridental membrane.

The gingivæ are developed in a remarkable way as a protective tissue. This is the chief function of the gingivæ; they are constructed purposely to protect the peridental membrane in the same way that the enamel is constructed to protect the pulp. We know the gingiva is unusually well supplied with blood vessels. Long fine legs of connective tissue run up through the epithelium close to the surface, so new epithelium may be supplied quickly, as it is needed and it will heal promptly when it is injured. It will stand as much punishment as any of the soft tissues in the body. We should have this idea of the protective function of the gingivæ so well fixed in our minds that we will examine the gingivæ for injury or for inflammation in the same way that we examine the enamel for decay, and if we find slight inflammations of the gingivæ, we will correct the causes, thus practicing preventive dentistry as applied to the chronic diseases of the peridental membrane.

I no more think that we are going to be one hundred per cent. successful in preventing diseases of the peridental membrane than we are in preventing involvements of the dental pulp, but with better education of our patients and a better appreciation of the relationship between the beginning and the end in both groups, we should continually make progress. The opportunity is before us now, with the trend of thought of prevention in the minds of everyone, to accomplish very much more in the next few years than we have accomplished in a good many years preceding.

I wish to present certain statistics that have been gathered, relative to these two conditions, and we will then make a little study of the causes of gingivitis, because if we are to accomplish anything in the prevention of diseases of the peridental membrane we must look to the gingivæ, where diseases of the peridental membrane always begin.



I am sorry that I will not be able to present to you in the same way the causes of chronic alveolar abscess. We today know very little about them. We know that these abscesses follow the death of the pulp, but as to the real causes of the abscess I am quite sure we don't begin to know enough. At the close of this lecture I will present a plan of study of alveolar abscess in which I hope I can gain the co-operation of the members of this society for the development of our knowledge along this line.

I referred last year to certain studies that I had been making in an effort to determine the incidence of infections involving the maxillary bones. These studies were carried out over a period of about three years and have been made in this way: We have taken full sets of mouth radiographs for about eight hundred individuals and for the most part these radiographs were made without any previous inquiry whatever as to the condition of the mouth or the health of those individuals. In other words, they were not people who came in suffering from some systemic disease, nor were they known to have chronic mouth infections. The radiographs were taken for the purpose of getting a statement of the percentage of individuals who have chronic alveolar abscess and chronic pus pockets about the roots of the teeth, because this really is a basic thing for us to know in the study of this problem.

These tabulations are taken from six thousand of the small mouth films for six hundred individuals, ten films being taken for each mouth. I went over the films carefully and made notations of the destruction of the bone of the alveolar process about the teeth resulting from the

TABLE No. 1  
TABULATION FROM 6,000 ROENTGENOGRAPHIC FILMS OF TEETH  
AND ADJACENT BONE IN MOUTHS OF 600 ADULTS

PERIDONTAL INFECTIONS

Age	Number of persons	Average number of teeth per person	Number of persons, some bone destroyed at sides of roots	Percentage having bone involved	Average number of infections per person for entire number
20 to 24	146	29.5	18	13	0.6
25 to 29	119	28.5	34	29	2.0
30 to 39	146	26.5	101	68	5.7
40 to 49	111	24.	87	77	7.1
50 & over	78	22.	69	88	9.0
Totals	600	26.5	319	53	5.0

peridental infections beginning in the gingivæ. From my records I have made up a table (See Table No. 1) showing the conditions as far as pus pockets are concerned. This tabulation is purely a study of the radiographs. Most of these people I have not seen at all. I have examined the mouths of very few of them. Shallow pus pockets, which had not yet involved the bone, are necessarily excluded from the table;

the pockets were deep enough to show in the radiograph a definite destruction of the bone of the alveolar process, so that in some measure at least these figures present less than the actual percentages of periodontal infections. On the other hand, it should be said that for the older persons in this group there were included some who were known to have diseases of the periodontal membrane at the time they came in for examination. These would tend to make the percentage of infection a little too high. I question whether the one wouldn't possibly balance the other. I feel certain the figures are not far enough away from the truth but what we are pretty safe in using them. Of the six hundred persons, about three hundred and fifty were members of the senior classes in our school in two successive years and I think you will agree that those men represent above the average of health and at least the average of mouth conditions.

These figures are grouped by ages, the first group being from twenty to twenty-four; the second, twenty-five to twenty-nine; the third, thirty to thirty-nine; the fourth, forty to forty-nine; and the fifth, all over fifty. The very large majority are below thirty-five years of age.

It is interesting to note the average number of teeth per person in these different groups. Those persons between twenty and twenty-four average  $29\frac{1}{2}$ ; those from twenty-five to twenty-nine,  $28\frac{1}{2}$ ; those from thirty to thirty-nine,  $26\frac{1}{2}$ ; those from forty to forty-nine, 24; and in the group from fifty on, 22. I think that bears out pretty well the statement that we were dealing with fairly average conditions.

In counting the number of persons having the bone of the alveolar process destroyed, we counted a person who had one single pocket the same as one that had fifteen or twenty pockets, but in the final column we show the average number of pockets per person. If we refer to the youngest group, twenty to twenty-four years, we find that 13 per cent. of them presented some destruction of the bone alongside the roots of the teeth, but the average number of infections per person, for the entire group of one hundred and forty-six, was less than one. In the group twenty-five to twenty-nine years, the number having pockets increased to 29 per cent., with an average of two pockets per person. In the next period, thirty to thirty-nine years, the percentage of persons having pus pockets jumped to 68 per cent., with an average of 5.7 pockets per person, and for the next ten-year period the number of persons having pockets is 77 per cent., with an average of 7 pockets per person, while for those over fifty years of age, the percentage is 88 per cent., with an average of 9 pockets per person. There is not only a very marked increase in the number of persons having pus pockets as age advances, but also a great increase in the number of areas per mouth.

For the entire group of six hundred adults, 53 per cent. show some destruction of the bone alongside the roots of the teeth, with an average of 5 pockets per person. That is a very high percentage and yet I



think it not far from the average. Some communities doubtless would give a lower percentage and other communities a higher.

A similar tabulation (See Table No. 2) was made to show the occurrence of alveolar abscess among this same group of persons. For the age of from twenty to twenty-four years the number of persons having one or more alveolar abscesses is 52 per cent.; from twenty-five to twenty-nine years, 51 per cent.; from thirty to thirty-nine years, 63 per cent.;

TABLE No. 2  
TABULATION FROM 6,000 ROENTGENOGRAPHIC FILMS OF TEETH AND  
ADJACENT BONE IN MOUTHS OF 600 ADULTS

ALVEOLAR ABSCESS

Age	Number of persons	Average number of teeth per person	Number of persons, some bone destroyed at apices of roots	Percentage having bone involved	Average number of abscesses per person for entire number
20 to 24	146	29.5	77	52	1.4
25 to 29	119	28.5	60	51	1.3
30 to 39	146	26.5	92	63	1.4
40 to 49	111	24.	65	59	1.5
50 & over	78	22.	39	50	1.3
Totals	600	26.5	333	55	1.4

from forty to forty-nine years, 59 per cent.; for persons over fifty years, 50 per cent. The highest percentage of persons having alveolar abscess is from thirty to thirty-nine, which has been reduced in the succeeding years by extraction of those teeth. The average number of abscesses for the whole group of six hundred persons examined was  $1\frac{1}{2}$  per person, and 55 per cent. of all those persons presented one or more alveolar abscess.

In making this tabulation, I only counted as abscesses those areas in which there was definite destruction of the bone. If there was any question as to the destruction of bone in a particular case, it was not counted. Some would contend that a percentage were granulomas and not abscesses, but for the purpose of this tabulation I have called all rarefied areas alveolar abscesses.

A third tabulation (See Table No. 3) was made by combining the figures for pus pockets with those for alveolar abscess. A great number of these persons had both pus pockets and alveolar abscesses. In this tabulation, a person who had either an alveolar abscess or a pus pocket, or both, was counted as one. In the group twenty to twenty-four years, the percentage of persons showing destruction of portions of the maxillary bones was 57 per cent.; of those twenty-five to twenty-nine years of age, 64 per cent.; thirty to thirty-nine years, 88 per cent.; forty to forty-nine years, 90 per cent.; fifty years and over, 98 per cent. For the six hundred persons, the number having one or both types of infection was 78 per cent.

TABLE No. 3

TABULATION FROM 6,000 ROENTGENOGRAPHIC FILMS OF TEETH AND  
ADJACENT BONE IN MOUTHS OF 600 ADULTS

## SUMMARY OF PERIDONTAL INFECTIONS AND ALVEOLAR ABSCESSES

Age	Number of persons	Average Number of teeth per person	Number of persons having peridental or apical infections, or both	Percentage of persons having chronic infections of maxillary bones
20 to 24	146	29.5	89	57
25 to 29	119	28.5	75	64
30 to 39	146	26.5	119	88
40 to 49	111	24.	100	90
50 & over	78	22.	77	98
Totals	600	26.5	469	78

In other words, three out of every four of the persons above twenty years of age coming to us as patients, have infections of their maxillary bones. If the things that a few men are telling us about these cases are true, most of us ought to be dead. Of course it is only the splendid resistance which the tissues afford in walling off infections which has prevented most of us from being dead and this is a very material factor to be taken into consideration in studying these cases.

These figures, of course, may not be exactly right. Six hundred examinations recorded by one individual or group of individuals is not sufficient to make absolute figures. If this same thing should be done by eight or ten groups in different sections of the country and then all of the figures brought together, the data would be more accurate, but whether or not these figures are really accurate, I am sure that they are close enough to give us a view of the situation which possibly most of us haven't had before.

I would like to impress you with the fact that we have in these two groups of cases the same pathological changes so far as the chronicity is concerned. The pus pocket alongside the root becomes a definitely chronic condition with the detachment of the peridental membrane from the surface of the cementum. The changes which take place in the peridental membrane, the alveolar process and the cementum are almost identical in the pus pocket alongside the root and in the alveolar abscess at the end of the root.

In the chronic alveolar abscess, there is a destruction of the fibres of the peridental membrane and of the cementoblasts which lie upon the surface of the cementum, thus denuding the cementum. This portion of the cementum becomes pus soaked and there is not hope of reattachment of tissue to it. The root end becomes a continuous irritant to the surrounding tissue. The ends of the fibres of the peridental membrane which were attached to the bone are destroyed as is also a portion of the bone.



There does not occur the same physiological absorption of the alveolar process, as the bone about the end of the root is not normally absorbed following the extraction of the tooth. Therefore, the destruction of the bone about root apices is entirely pathological. That is an important difference in the changes which take place in the tissues with the development of these two types of chronic infection.

The profession seems to have universally given up hope that there will be reattachment of tissue to the surface of the root in cases of chronic alveolar abscesses. I can't see why many men still contend that with the pus pocket alongside the root, in which the pathological conditions and possibilities of repair are practically identical, there is the likelihood of reattachment of the tissue.

With these facts in mind, let us go back to the question of causes. If we will follow through the study of almost any disease we will find that measures for prevention of that disease have, as a rule, only been developed as the pathology has become known. First only the symptoms of a disease are treated; later on, as the study of pathology gradually is developed, the application of treatment becomes more logical and is applied more definitely to the real changes that are taking place; still later, when the real cause of the disease is known, the treatment for prevention may be applied to that cause.

We should look in exactly the same way at the diseases of the peridental membrane. Our first thought, then, should be to go back to the gingivæ and get fixed in our minds as clearly as we may, the causes of gingivitis.

As I have read the literature of the diseases of the peridental membrane, it has seemed to me that most men who have written have had the idea that the large majority of the pus pockets were due to deposits of salivary calculus. In my judgment that is very wrong; only a comparatively small percentage of the pus pockets are caused that way, the larger number being due to deposits of serumal calculus on the enamel (not on the cementum) and to injuries to the gingivæ. In order to get figures that would be reliable I sent out some years ago a request to a number of men scattered throughout the country, asking them to make critical examinations of the gingivæ of about twenty-five patients each, and report the causes of areas of gingivitis. I asked them to exclude cases in which there were pus pockets and only report those in which there were areas of gingivitis without serious detachments of the peridental membrane. (See Table No. 4.)

This examination covered the mouths of five hundred adults of an average age of twenty-six; rather young adults. Of the five hundred mouths examined there were reported only twenty-five that were entirely free from gingivitis, leaving four hundred and seventy-five having gingivitis. There were forty-two hundred and sixty-five areas of gingivitis reported for the other four hundred and seventy-five mouths, which

TABLE No. 4

TABULATION OF AREAS OF GINGIVITIS FOUND IN MOUTHS OF  
500 ADULTS, AVERAGE AGE 26.3 YEARS

Number of mouths free from gingivitis.....	25, or 5%	
Number of areas due to deposits of salivary calculus.....		1348.
In mouths of 193 persons, 7.8 areas per person.		
Percentage of persons having salivary deposits.....	39.6	
Percentage of areas due to salivary deposits.....	31.6	
Number of areas due to deposits of serumal calculus.....		563.
In mouths of 75 persons, 7.5 areas per person.		
Percentage of persons having serumal deposits.....	15.	
Percentage of areas due to serumal deposits.....	13.1	
Number of areas due to injuries:		
Bad margins of fillings or crowns.....	783.	
Lack of contact of fillings or crowns.....	495.	
Improper contact of fillings or crowns.....	305.	
Malpositions or atypical forms of teeth.....	263.	
Lack of contact, no caries.....	255.	
Caries of proximal surfaces.....	233.	
Worn contacts.....	19.	
		2364.
Percentage of areas.....	55.1	
Total areas of gingivitis in 475 mouths.....		4265.

is 8.5 areas per person for the five hundred examined. Of these thirteen hundred and forty-eight areas were reported as due to deposits of salivary calculus in the mouth of one hundred and ninety-eight persons. In counting, each side of each tooth was counted as a single area. If a person had a deposit on the lingual side of the lower six front teeth, we counted that as six areas. If on both the lingual and labial sides, we counted it as twelve areas. The percentage of persons having gingivitis caused by salivary deposits was 39.6 per cent., and the percentage of all the areas of gingivitis reported was 31.6 per cent. In other words, about one-third of all the areas were reported as due to salivary calculus. Persons of an older average age doubtless will show a larger percentage of these deposits. Attention already has been called to the fact that it is only in a minority of cases that pus pockets are formed as a result of deposits of salivary calculus. As a rule, the deposit destroys all the overlying soft tissue without forming a pocket.

The number of areas reported as due to deposits of serumal calculus on the enamel was five hundred and sixty-three. These were in the mouths of only seventy-five persons out of five hundred. The number of persons having serumal deposits was 15 per cent. of the five hundred, and the areas of gingivitis caused by these deposits were 13 per cent. of the total number of inflamed areas.

There were reported twenty-three hundred and sixty-four areas of gingivitis due to injuries. Of these, seven hundred and eighty-three were due to bad margins of fillings or crowns, four hundred and ninety-six to lack of contact of fillings or crowns, three hundred and five to improper contact, two hundred and sixty-three to malpositions and atypical forms of teeth, two hundred and fifty-five to lack of contact with no



decay, two hundred and thirty-three to proximal decays and nineteen to worn contacts.

If the areas due to bad margins, lack of contact and improper contact of fillings and crowns are added, the total is fifteen hundred and eighty-four, or 37 per cent. of all areas of gingivitis. In other words, the dentist has the opportunity by greater exactness in technic to eliminate more than a third of the local exciting causes of gingivitis. Or it may be said that dentists actually are causing one-third of these inflammations.

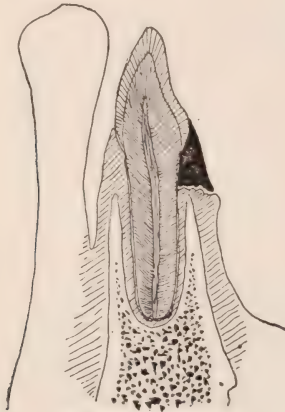


Fig. 17

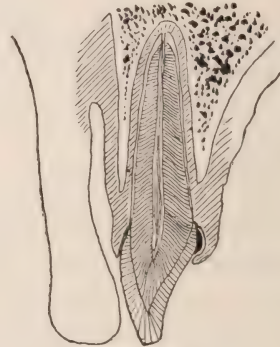


Fig. 18

Fig. 17.—An accumulation of salivary calculus on the lingual surface of a lower incisor. All of the tissues formerly overlying the root have been destroyed, and have been replaced by the deposit. As a rule, there is no detachment of the peridental membrane below the position of the deposit; no pocket is formed alongside the root.

Fig. 18.—A deposit of serumal calculus on the lingual surface of the enamel, under the free gingiva of an upper incisor. This type of deposit is often the cause of a pus pocket. Similar deposits on the cementum can not be laid down until after the peridental membrane is detached, therefore should not be considered a cause, but a result of the formation of the pocket.

I cannot believe that dentists would leave so many operations in bad form if they appreciated the damage to the gingivæ and later to the peridental membranes. It should bring home to us the fact that we should be more careful in our observation of the gingivæ. We never will develop that care as we should until we form the habit of recording each area of inflammation. This can be done by a perfectly simple method. One symbol or number is needed to indicate a deposit of salivary calculus, one serumal calculus, and one for an injury, such as the impaction of food between the teeth, etc. The several types of injuries may be subdivided. Each one who will work out a simple plan and use it will soon find that he is seeing much more than he formerly did in making mouth examinations.

Our lack of appreciation of the connection between simple gingivitis and the formation of a serious pus pocket largely is due to the fact that the changes in the tissues are spread over so long a period of time.

It is doubtless oftentimes five or ten years from the initial gingivitis to the development of the pus pocket. The original gingivitis either was not recognized or has been forgotten when the pocket is discovered. The two are not associated in our minds in the definite relationship which they bear to each other.

May I recall a series of colored lantern slides which my father made ten years or more ago and which were reproduced in his book on dental pathology<sup>2</sup>. These consisted of several slides, each representing a stage in the progress of periodental infection. The first is a case in which a mesio-occlusal filling had been placed in a first molar without restoring proper contact, permitting food to wedge in between the two teeth. It had crowded the gingiva down and pushed it out a little toward the buccal and lingual. It was slightly swollen and discolored in both embrasures. Most of us probably have overlooked hundreds of such inflammations. At this time there was no disease of the periodental membrane; just a case of an injury to the gingiva, lowering the resistance and making it a fertile field for the entrance of micro-organisms.

In the next illustration, also of a case with an open contact, there is a shallow pocket on the proximal surface of one tooth. A thin blade could be passed three millimeters under the gum. Here is a stage in which the group of the periodental fibres which passes across the interproximal space—the group which serves to hold the contact tight—has been broken; therefore, in this case we already have lost the opportunity to maintain a good contact between these teeth. Even though a contact is built out, the pocket is already so deep that the teeth likely will move farther apart and contact can not be maintained.

The next case represents a little further progress. The periodental membrane is detached from the proximal surfaces of both teeth. The pocket is about five or six millimeters deep. It is utterly hopeless now so far as a restoration to normal is concerned. The interproximal bone is destroyed to the depth of the pocket and much of the soft tissue is gone, there being a deep cavity in the soft tissue between the buccal gingiva and the lingual gingiva. Other illustrations in the series showed the formation of an acute lateral abscess in one of the pockets, and the destruction of tissue caused by it.

The point in reciting these cases is to impress the fact that each one represents a different stage in the progress of all. All began with a gingivitis. All could have been cured before the periodental membrane was injured. It is this type of preventive treatment that is needed for periodental disease.

If we can have in mind the fact that a very large percentage of cases involving the periodental membrane are due to improper contacts of teeth, and if, keeping the progressive destruction of this tissue also in mind, we will come to appreciate the fact that almost any



one of these areas of gingivitis easily can be cured by a very simple operation, like building out the contour of a filling, replacing a filling, cutting a cavity in a tooth not decayed and placing a filling to make contact, or doing whatever may be necessary to relieve the irritation. We will in each case prevent the formation of a pus pocket, and will be practicing preventive dentistry that is worth while.

It is important that we pay especial attention to deposits of serumal calculus on the enamel under the free margin of the gum as a cause of peridental infection. This is the only type of deposit of calculus that ought to be considered as causal of the formation of pus pockets. A deposit occurring on the enamel causes an inflammation of the inner surface of the free gingiva, and the infection travels along the lymphatic vessels into the peridental membrane, resulting in the destruction of that tissue.

After a pocket has been formed alongside the root, there usually would be found a deposit of serumal calculus on the surface of the cementum, but this deposit should not be considered the cause of the formation of the pocket, because the deposit is not laid down on the cementum until after the pocket already has been formed to that depth. It should be recognized that when this deposit has been laid down on the cementum it becomes a cause of further destruction of the tissue deeper down, but it isn't the cause of the formation of the pocket itself. So we must look to the deposit of serumal calculus occurring on the enamel and the areas of the gingivitis caused by injuries to get at the real causes of the formation of pus pockets.

We also must recognize a group of cases in which the systemic condition seems to be the cause, cases in which we can not find a local cause. We find tooth forms and contacts perfectly good and absolutely no deposit of calculus at all. There certainly must be some reason for the occurrence of those pockets. In my own mind, maybe without sufficient reason, I have fixed the number of cases due to systemic conditions at about 5 per cent., the other 95 per cent. being due to the serumal deposits on the enamel and mechanical injuries.

We ought to prevent a very much larger number of cases of serious injury to the peridental membrane than we have been doing. Success in this depends on two things: *First*, upon our own appreciation of the relationship of gingivitis to peridental disease, and *second*, upon education of patients to give us the opportunity to do the preventive work which should be done. There is a very good prospect of tremendous improvement by each one of us in the conduct of our practice, remembering that this applies primarily to the younger persons coming to us.

Each of us already has a number of patients who have definitely fixed lesions of the peridental membrane. We will do the best we can with those, but let us take new hope and make a new and stronger effort

for the younger persons, with the expectation that we will carry a larger percentage of them through life without the formation of pus pockets.

I want to show you one other tabulation (See Table No. 5) from the six thousand radiographs. This has to do with the condition of root fillings and the occurrence of alveolar abscess. In the mouths of the six hundred persons for whom the radiographs were made there were fifteen hundred and ten root fillings, which were well shown by the radiographs. The teeth were listed in two groups, those having large canals and those having small canals. The upper centrals, cuspids, second bicuspid and lingual roots of molars and the lower cuspids, bicuspid and the distal roots of the molars were classified as having large canals. The remainder were classified as having small canals. The radiographs of the fifteen hundred and ten root fillings were studied and tabulated as "good" or "poor." In determining this I gave the poor root fillings the benefit of the doubt to this extent: I classed a root filling as good in every case in which the gutta percha had apparently filled the apical portion of the canal, or, in case the gutta percha did not reach the apex, if I could not see an open canal beyond the gutta percha, I counted that as good for this tabulation. In all those cases in which the root-canal filling did not reach to the apex and in which I could see something of the open canal I counted it as poor. Of course if anything projected through the end of the root canal, I counted that as poor.

TABLE No. 5

TABULATION FROM 6,000 ROENTGENOGRAPHIC FILMS OF TEETH AND ADJACENT BONE IN MOUTHS OF 600 ADULTS

SUMMARY OF ABSCESES IN RELATION TO ROOT FILLINGS

Good root fillings, large canals, 343	Number abscessed.....	31
Good root fillings, small canals, 184	Number abscessed.....	19
	527	50
Poor root fillings, large canals, 570	Number abscessed.....	356
Poor root fillings, small canals, 413	Number abscessed.....	271
	983	627
	1510	677
Percentage of abscesses for all root fillings.....		
Percentage of abscesses for good root fillings.....		45
Percentage of abscesses for poor root fillings.....		9
		63

Of those root fillings classified as good in large canals there were three hundred and forty-three, and of those, thirty-one of the teeth were abscessed. Of the good root fillings in small canals there were one hundred and eighty-four, and nineteen were abscessed. Of the poor root fillings there were five hundred and seventy in the large canals, of which three hundred and fifty-six were abscessed and four hundred and thir-



teen in the small canals of which two hundred and seventy-one were abscessed. That gives a percentage of abscesses for all root fillings of 45 per cent., a percentage of abscesses for those classified as good root fillings only 9 per cent. and the percentage of abscesses for poor fillings, 63 per cent. We do not know how many of these teeth were abscessed before the root-canal fillings were made, but doubtless the number of abscesses following good root-canal fillings is less than 9 per cent. We must remember that these root fillings were made by all classes of operators and doubtless many of the operations were made years ago, before the profession became alive to the importance of the most careful technic. My own belief is that the careful and thoroughgoing operator of today should have considerably less than 5 per cent. of apical infections following root filling.

This tabulation should inspire us to a realization of the fact that with the more careful technic that all of us are using today, we have a pretty good chance of not having infection about the roots of the teeth if we deliberately remove vital pulps and make the best possible fillings. In making this statement I do not mean that we should slacken on the conservation of the pulp. There is no question but what a live pulp is the best to have in a tooth, but I do not feel the alarm that some do in connection with the removal of a pulp from an upper central incisor, cuspid or any tooth which has a tolerably straight root with a fairly large canal. We should take seriously to heart the fact that about three-fourths of all of these root fillings were classified as poor and that should inspire us to devote much energy to improving our root-canal technic.

In closing, I wish to present a plan for the study of pulp conditions and of alveolar abscess. We do not know what causes chronic alveolar abscess further than that something happens after a pulp dies or is removed that results in the destruction of the tissue about the apex of the root. We do know that if that pulp remains dead in a tooth it will become infected and the tissue around the apex of that root also may become infected and destroyed. But that does not account for the large number of alveolar abscesses on teeth from which vital pulps have been removed. Why do these abscess? I think no one knows definitely.

There are a number of reasons mentioned. Some say the use of arsenic, but they can't prove or disprove that. Some men say the use of cocain, but they can't prove or disprove that. I think many abscesses are caused by the drugs sealed in the canals. Preparations containing formalin will destroy tissue if they get through the apex. If you will take any medicament that you are accustomed to put in a root canal and seal it to your arm under a piece of rubber dam for forty-eight hours, you will have a definite example of what it will do to soft tissue. We ought to know the possible effect of every drug we are using in root canals today. We should know whether or not they are harmful to soft tissues. There are no figures to prove or disprove any one of these

contentions that are now going around regarding the causes of alveolar abscess.

We have established in our school a plan of tabulation of these cases which could just as well be used by groups of dentists in cities throughout the country to gain this information. It amounts to a very simple case history of each pulp case. (*Fig. 19.*) This form is printed on an envelope. It provides a simple means of recording certain information which we wish regarding each pulp case.

STUDENT		NORTHWESTERN UNIVERSITY DENTAL SCHOOL																															
DENTAL PULP CASE HISTORY																																	
PATIENT'S NAME																																	
AGE																																	
PATIENT'S NUMBER																																	
ADDRESS																																	
TOOTH	Diagnosis	Color	Removal	Treatment	Sealing	Root Filling	Subsequent Radiograph	Color																									
RIGHT	LEFT	Vital, Normal.	Vital, Hyperemia	Vital, Caries.	Dead, no Abs.	Slight Abs.	Abs. Extract.	Previous R. F.	Normal.	Discolored.	Arsenic.	Cocain, Pres.	Infiltration.	Conductive.	Date, Removal.	Creasote.	Eugenol.	1-2-3.	Gutta-percha.	Cement.	Length, mm.	Gutta-percha.	C. P. and C. P.	Inaccess. Apex.	Good.	Fair.	Resection.	Bone O. K.	Slight Abs.	Abs. Extract.	Uncertain.	Normal.	Discolored.

Fig. 19.—DENTAL PULP CASE HISTORY—DIRECTIONS

This chart is printed on an envelope, the illustration being actual size. The history is to be made out as the case progresses. The radiographs of the case are to be kept in the envelope. If the pulp is dead, or if the root has been previously filled, the patient is required to have a radiograph made before treatment is begun.

1. Enter patient's name, age, and address.
2. Indicate tooth by number or letter.
3. Diagnosis. *a.* If pulp is vital and normal, and is to be removed because a crown is to be made, or if it is accidentally exposed in cavity preparation, mark X in first column. *b.* If pulp is vital, and is removed on account of hyperemia which has developed into inflammation, mark X in second column. *c.* If pulp is vital, and exposed by caries, or so nearly exposed that its removal is required, mark X in third column. *d.* If pulp is dead, mark X in fourth, fifth or sixth column, according to the condition shown by the radiograph. It will be considered a slight abscess if any injury to the bone is shown, and treatment is undertaken. It will be marked in column "Abs. Extract" if treatment is not considered advisable. *e.* If there is a previous root filling, mark X in the last column, also an X in column four, five or six, according to the condition shown by the radiograph.
4. Color of tooth. Mark X in proper column.



5. Removal of pulp. *a.* If arsenic is applied, enter DATE in figures in proper column, as 5-2-16. *b.* If cocain pressure is used, or novocain anesthesia, infiltration or conductive, enter DATE in proper column. *c.* Enter DATE pulp is removed in proper column. This date is to be entered if arsenic was applied, or if the tissues were anesthetized, or if the pulp was dead.

6. Treatment. Enter DATE of application of medicaments. If a second treatment of the same drug is made, enter DATE on second horizontal line, etc. Doubtless many dentists would prefer to have other drugs entered in these column headings.

7. Sealing. Mark X in proper column.

8. Root filling. *a.* Mark in first column length of tooth from occlusal surface or incisal edge in millimeters, making measurement with a fine smooth broach and using a Boley gauge. If crown is broken off, so state at bottom edge of envelope. Place diagnostic wire and have radiograph made. *b.* Mark DATE in second or third column to indicate gutta percha alone, or chloro percha and gutta percha used as root filling. *c.* If canal is inaccessible to apex, indicate by fraction  $\frac{1}{2}$ ,  $\frac{2}{3}$ , or  $\frac{3}{4}$ , etc., according to distance diagnostic wire shows in radiograph. *d.* Have radiograph made of root filling. Mark X indicating whether it is considered a good or a fair filling. In case it is a poor filling, a new root filling should be made, also another radiograph. *e.* In cases of teeth having more than one canal, use a separate horizontal line for each canal, and indicate each by writing the initials, as m-l, m-b, d-b, dis, ling, buc, etc.

9. Resection. If root is resected, enter DATE in this column.

10. Subsequent radiograph. It is the intention to send for patients to return in about six months and make a check-up radiograph. When this is done the DATE should be entered in the proper column, indicating the condition of the bone at that time. Additional radiographs should be made after several years.

11. Color. The color of the tooth will be marked by the DATE of a subsequent examination.

Suppose a radiograph taken today shows an abscess at the apex of a tooth which you treated a few years ago. How many of you keep a record so you can go back and get an idea what caused that abscess? Do you know whether the pulp was dead when the case presented to you? Do you know what medicaments were sealed in the canals? Do you know anything further than that you "treated" the tooth?

Here is the information we are proposing to tabulate: In the first place we record the tooth, then indicate the condition of the pulp. A radiograph is taken if it is dead or if the tooth has been previously "treated." The method of destruction and removal is recorded with date, then for each treatment the drug and the date, and the method of sealing. A memorandum is made of the kind of root filling; a radiograph is made of the root filling. Radiographs of the case are filed with the record, being placed inside the envelope. It is planned to radiograph as many cases as possible a year or so after the root fillings are made and record the condition, thus eventually checking and comparing results of various methods of procedure.

If we could get together in two or three years from now, a thousand or two thousand such reports, we could make a valuable tabulation. Suppose we had one thousand cases in which we had used arsenic and suppose our subsequent radiographs showed that three or four hundred of them were abscessed. We would know that we should quit using it. If only a small number were abscessed we would feel safe in saying that it was all right to use arsenic. With the other drugs, those which gave the best showing in a thousand or two of these reports would be used in preference to others. I believe there is opportunity to gather very

valuable information, and I very much hope that some of your district organizations or groups in various cities where you have study clubs will take up this scheme and collect some really accurate and reliable data as to the cause of chronic alveolar abscess. When we have that, and not until then, will we be able to change our methods in a real, practical, scientific way.

### THIRD LECTURE

#### RELATION OF CHRONIC MOUTH FOCI TO SYSTEMIC CONDITIONS

Some years ago in a medical meeting, Dr. Charles Mayo made the remark that from a few hours after birth, life was a continuous battle with micro-organisms. I like to add to this statement one suggested by the story of the goblins, that the microbes always will get you in the end.

In the study of focal infections in relation to systemic diseases, I wish to recommend two little books, both of which have been written by medical men in recent years and which, in small compass, give a very good general idea of the whole problem. The first of these is a book entitled *Focal Infection*, by Dr. Frank Billings, of Chicago. The second is entitled *Oral Sepsis in Relation to Systemic Diseases*, by Dr. William W. Duke, of Kansas City. While there is an enormous amount of material available both in medical and dental journals and in books, I think we will get as good an idea of the whole situation from these two little books as from almost any reading we may do. We are indebted to Dr. Frank Billings, who is now in charge of the reconstruction work for men injured in army service, for the development of our most practical working knowledge of focal infection in relation to systemic disease.

The idea of focal infection is as old as the practice of medicine. I imagine a good many have the idea that this is something tolerably new. I want to read you a paragraph called to my attention by Dr. Geo. N. Kreider, of Springfield, Illinois, a year or so ago, which Dr. Duke has inserted in his book. This is copied from a book written by Dr. Benjamin Rush, Professor of the Practice of Medicine in the University of Pennsylvania, more than a century ago.

"Sometime in the month of October, 1801, I attended a woman with rheumatism of her hip joint which yielded for a while to the several remedies for that disease. In the month of November it returned with great violence accompanied by a severe toothache. Suspecting the rheumatic infection was excited by the pain in her tooth which was decayed, I directed it to be extracted. The rheumatism immediately left her hip and she recovered in a few days. She has continued ever since to be free from it."



There follow a couple of pages, also copied from this same book, of similar case histories reported by Dr. Rush, a little over a century ago. There is almost no year in the literature of medicine from then until now, in which we could not find references to cases of this kind if we searched for them. Many men in our own profession have called attention to the relationship of mouth infections and systemic diseases as long as twenty-five or thirty years ago. We find many references in the writings in our dental literature.

However, it is only in recent years that we have come to a much better understanding of these things. The work of Dr. Billings and the group of men associated with him supplied the facts necessary to prove the relationship of the original focus to the secondary effect. Micro-organisms were isolated from an original focus either in the tonsil or about the teeth or elsewhere and the same organisms were found in pieces of tissue cut from the knee joint or tendon sheath in cases of arthritis. The organisms from both locations, from the original and secondary focus, were injected into animals and both groups of animals developed the same lesions that the individual had. Then they cut into the joints of these animals and recovered the same organisms. That was done over and over again with a large variety of cases so that there could be no question of the proof of the relationship.

Previous to this work all of the evidence that we had was just such as I have given you here from Dr. Rush—clinical evidence. That was all our friend, Hunter, the Englishman had, when he ripped into American dentistry in his famous article on oral sepsis. He had no laboratory evidence but drew his conclusions from observation of cases in hospital practice, recognizing the improvement in a large percentage of cases as a result of the extraction of teeth and cleaning of the mouths of infection.

It is not my intention to go into that phase of this subject because the case has been sufficiently well proven so that I believe it is accepted by the majority of members of both the medical and dental profession and by the public as well. I had thought it would be of more benefit to us to review the situation in order that possibly we might have a little broader view.

A local focus of infection is described by Dr. Billings as "a circumscribed area of tissue containing pathogenic micro-organisms." Of course that may be almost anywhere in the body. The infection which is so circumscribed is usually an infection caused by a streptococcus, pneumococcus, diplococcus, meningococcus, or gonococcus. Those are the main organisms we find in these foci, and of the streptococcus there are a number of different strains. For instance, in the chronic alveolar abscess we find a streptococcus viridans.

Previous to the establishment of a focus of infection anywhere in the body there is, as a rule, an injury, although not necessarily an open

break of the tissue, through which the micro-organisms gain entrance. There may be an actual break in the tissue or the tissue may be irritated by pressure, or by slight injury in any form, sufficient to reduce its resistance to infection. As a result the irritated or injured tissue is invaded by micro-organisms. The various common locations of these original foci should be definitely held in mind, because there is no question but that at the present time too much attention is centered upon the teeth. Possibly it might be fairer to say that not enough attention is paid to the other locations in comparison with the foci about the teeth. In the main we have the location of original foci of infection about the atria of the body, about the openings of the body where mucous membrane meets skin. The large majority of these foci are in the head because we have most of these atria there.

If we give these somewhat in the order that Dr. Billings gives them we should start with the mouth and would mention first, because of their greatest frequency, the two groups of chronic local foci which we have in our field, the chronic alveolar abscess and chronic pericementitis—the pus pocket alongside the root of the tooth.

Probably we should mention next the tonsil because of the very great frequency of local foci established in these tissues. Then we should consider the nose, the maxillary and frontal sinuses, and the naso-pharynx, also the mastoid, the eustachian tube and the ear, all of which very frequently are involved in infection. Then the air passages, the bronchial tubes which are many times the seat of chronic bronchitis; and then the digestive tract in which there may be a chronic involvement of the appendix, the walls of the stomach, or the gall-bladder, any one of which may prove as serious in the spread of infection as the locations in the head.

The genito-urinary tract is a frequent seat of chronic foci. Most of us saw yesterday in the U. S. Army film, "Fit to Fight," a very excellent visualization of the original involvement and the spread of infection in both the male and female genital organs. There was one important feature lacking in that demonstration, the establishment of chronic foci and of the secondary infections which may occur. Although these were touched upon they might have been emphasized with added value to the demonstration.

In thinking of these various groups of local foci of infection we should keep in mind the fact that the transmission from the local focus may be by two routes; there may occur a nearby secondary manifestation by lymphatic channels, or almost anywhere in the body via the blood stream. There are too many cases coming either to the physician or the dentist in which radiographs of the teeth are made and if these show an infection in the maxillary bones the conclusion immediately is drawn that the source of the secondary lesion has been found. Neither the physician nor the dentist is looking farther to find other local foci; or



maybe only the teeth and the tonsils are examined, looking nowhere else if an infection is found in either.

We must appreciate that we have one of the most complicated problems that possibly could confront a group of men; that in the diagnosis of these cases all of the regions that I have mentioned ought to be examined carefully if we are thorough in our work. I don't mean that we, as dentists, should attempt to do this; but we have a right as dentists to ask a physician whether or not these other regions have been examined.

I want to call your especial attention to the fact that, of all of this whole series of local foci, the pus pocket and the chronic alveolar abscess present the most unusual conditions for the maintenance of chronicity, which do not exist in other local foci in the body. The mouth foci are more chronic than any of the others, because in all of the others we are dealing either with soft tissue alone or with bone, both of which have a definite blood supply and the necessary machinery for repair, for cleaning up an infection and rebuilding the tissue that has been destroyed. With the two mouth groups the cementum is the tissue of chief interest; it is different in type from any other concerned in a local focus; it is a tissue having no circulation of blood, no power of repair or throwing off a dead portion of itself; therefor dead cementum becomes a permanent irritant to adjacent tissue. This is a fact in the pathology of these mouth infections which most physicians do not understand and which we have not understood as clearly and definitely as we should.

To go back for a moment to the statement relative to the present habit of finding infection in the mouth of a person suffering from some secondary condition, and possibly cleaning up the infection in the mouth without looking elsewhere, I would like again to call your attention to the percentage of persons who have these chronic infections in the mouth. The tabulation showed that 78 per cent. of adults examined had chronic foci which had destroyed portions of the maxillary bones, which means that at least three out of four who go to a physician suffering with any secondary systemic condition are almost certain to have local foci in their mouths.

Ever since Dr. Billings carried out his series of laboratory studies and got the broad view that he has of this whole problem, he has refused to take cases of chronic arthritis, rheumatism and all of that group, as patients, unless they are willing to go to the hospital and stay there for ten days or two weeks so that a group of specialists can make examinations in order to find all the chronic foci in the body. They can then clear them all. Too many are finding an alveolar abscess today, extracting the tooth, then waiting two or three months and see if the patient is better. Next, they discover an infected tonsil, and maybe later on find an infection somewhere else and spend possibly a year or two making the full diagnosis. Possibly the last place is the one that has caused the secondary infection. It is a complicated problem and

I appreciate that our principal duty is to see that our own field is clean. On the other hand we surely should have enough of interest in these cases, in the patients themselves, to insist that all of these fields be looked over as carefully as they may be.

With the tremendous number of local foci that are presented and particularly those about the teeth, I think it is quite apparent to anyone that the large majority of these persons must not suffer from secondary involvement, at least over a period of a good many years; because if you take the most of us here in this group, most of us are probably in good health and yet three-fourths of us have these foci of infection about our teeth. That expresses, in a way, the resistance or the immunity to these conditions which is developed within our bodies, in part by the resisting wall of tissue which is built around these foci in order to prevent them from gaining ready access to the circulation or lymph channels and second by the production, within our bodies, of the anti-bodies which combat infection. We have the factor of resistance always to be considered. In addition, there is the possibility of increasing the anti-bodies or the value of those that are developed, by the use of serums.

Dr. Billings calls attention to the fact that among persons who live in large cities, practically every one carries, at some time or other in his life, a local focus of tuberculosis. The large majority of those cases are controlled by the action of the tissues of the individual; they get well. In fact, the most of them never know they have had tuberculosis. If the conditions of the chronic alveolar abscess were comparable to the conditions of a focus of tuberculosis, a large percentage of these abscesses would heal, but there is not the same chance of the healing and clearing up of a chronic alveolar abscess as there is a tubercular focus. I mean so long as the tooth remains in position.

The question of changes in the body fluids of an individual and in susceptibility and immunity to diseases, form an interesting chapter in the history of this whole subject. Persons will go along in apparently good health and have present within their bodies one or more local foci for many years with no ill effects, but there are certain things which will make it possible for those local foci to gain entrance into the circulation because the resistance of that person is lowered. Among those things most common are partial starvation, unusual cold, dampness, debility from overwork or lack of sufficient sleep. Any of those things, to which our soldiers were subjected, lower the resistance; being out in the cold rain and having to stand for hours in the trench with the feet and ankles submerged in water, or going for several days with too little food; any one of these has been enough to so reduce the resistance of the individual that he has pneumonia or rheumatism, which means usually that the local focus in that individual's body somewhere was not harmful to him until his resistance was lowered.



A chicken is almost immune to anthrax, but it was found that a chicken immersed in cold water for a few minutes becomes susceptible to anthrax. That is an interesting observation in connection with the diseases that develop in the armies in France as a result of the damp, rainy weather. There are other things that might be mentioned that are important factors in reducing the resistance of individuals; one is alcoholism, and of course chronic diseases like tuberculosis also would reduce resistance.

In the diagnosis of the focus, Dr. Billings points out one thing that it seems to me should be of interest to us and that is that cases of rheumatism, cases involving the heart tissues, endocarditis and myocarditis, are most likely to result from a local focus in the head. That is principally because of the fact that these infections occur as a rule by some strain of the streptococcus and we usually find them in the head. Gonorrheal arthritis would be the exception to this rule.

I think we ought not to review this subject without referring to two features of the work of Dr. Rosenow, with which you are no doubt already familiar. One is the transmutation of the organisms of the pneumococcus group. He succeeded over and over again in bringing about a change from a streptococcus organism to a pneumococcus organism and back again to a streptococcus, or he could run these around through any one of a number of different strains or types and bring them back to the type they were before by following a routine of cultures and animal inoculation. It is therefore possible to have a streptococcus of one type in an original focus which may produce somewhere else in that same body, perhaps, a pneumococcus or a streptococcus of a different type.

The other study of Rosenow's demonstrated the selective affinity of organisms for certain tissues, or of certain strains of streptococci for certain tissues. The results of these experiments have been printed, yet I want to take a minute to refer to them. This series was concerned with cases of appendicitis, chronic infection of the gall-bladder, ulcers of the stomach and arthritis. Dr. Rosenow took the organisms that had caused infection in these four groups of cases from the tissue at operations and injected animals with these organisms. After a long series of experiments with hundreds of dogs and rabbits, tabulations showed that in those cases in which the organisms were taken from the gall-bladder the very large percentage of animals injected developed infections of the gall-bladder, and those in which the organisms were taken from the joints, the very large percentage of animals developed arthritis and heart lesions which are so often found in humans in connection with arthritis. The same was true of animals injected with organisms taken from infected appendices or ulcers of the stomach; the majority developed lesions of these tissues.

It was apparent that those organisms which had caused the infection in the particular human tissue, if injected into animals, sought out the same tissue in the animals in preference to other tissue. This may have no particular bearing on our own problem, yet these things are of interest in giving us a little better understanding of the whole situation.

As to the secondary infections which occur as a result of original foci, it is extremely important that we should have in mind that there are two very distinct groups of these, a group of acute secondary infections and a group of extremely chronic secondary infections. In the acute infections we would mention the acute rheumatic cases and the acute cases of neuritis as being possibly the most common.

If there occurs an acute infection, the patient knows about it and there is no question but that treatment may be promptly applied. As a rule, the acute infections do not do so much damage as the chronic infections. In our own field, in the acute alveolar abscess, infection from the pulp tissue will pass out through the peridental membrane, involve the bone and may cause a very severe destruction of the bone without seriously injuring the peridental membrane. If the abscess is lanced, there may occur a perfect healing of all of the tissues, other than the pulp of the tooth. But in cases of chronic infection about the tooth, the gradual destruction of the peridental membrane and the loss of the specialized elements, eliminates the opportunity for restoration to normal.

If the secondary manifestations always were acute we would be safe in leaving chronic foci in the mouth, because we would have a sharp notice when they were doing secondary harm and we could extract the teeth and the lesion would heal up and no serious harm would be done. Unfortunately the large percentage of cases are not of that type; the secondary manifestations are extremely chronic. They are so insidious in their onset and progress that they are not recognized by either patient or physician until well established.

We should almost universally call this to the attention of our patients who are suffering from some secondary lesion and we extract teeth for them. Take for instance a case of arthritis; a physician has referred the case to us for examination of the mouth and we find an abscessed tooth or two, which we tell the patient we will extract because it may be the cause of the arthritis. We ought to tell them that the infection about the tooth may or may not be related to the arthritis, and even if it has caused the arthritis, the joint condition may not improve following the extraction of the tooth, because the infection already may be well established there. However, it is proper to extract the abscessed tooth anyhow, to remove a possible source of systemic infection. Unless we do call the attention of patients to this, I think we often will be criticised for having extracted a tooth which had given no bother, without benefit from its removal.



In considering the seriousness of any particular type of local lesion, in our field or elsewhere, the possible development of pressure in that local focus is important. If pressure is developed in a local focus it is almost certain that the contents of that focus will be forced into the circulation. We would consider the "blind" alveolar abscess the most dangerous lesion we have to deal with; the alveolar abscess that has a sinus through which the contents of that abscess may be discharged is less dangerous than the blind abscess; the pus pocket along the side of the root of the tooth presents about the same danger as the chronic abscess with a sinus. However, the danger of the pus pocket must vary in accordance to its depth, because the deeper it is the less the opportunity for free discharge and therefore the more frequently will the surrounding soft tissue be invaded.

However, this mechanical relationship is not the only thing to be taken into consideration; the question of the activity or the virulence of the particular organism in producing pressure and along with that, the health of the individual as represented by the wall of resistance built around that particular focus are of vital importance. With a given amount of pressure within that focus the effect of that pressure will be determined by the quality of the resisting wall. We have all three of these elements to take into consideration when we think of the possibility of infection getting through the resisting wall into the circulation.

What is our problem in this whole situation? What is the duty of the dentist in handling these cases? We have here two groups of chronic foci which are not curable in the sense that it is possible to get those tissues back to normal. If we have conditions in the mouth that are different in the establishment and maintenance of their chronicity from any other in the body and if these conditions bear the relationship that they seem to to the secondary infections and particularly those of the chronic type, it seems to me that our duty in these cases is perfectly clear. Notwithstanding the fact that the majority of persons who have these abscesses are not at the time suffering from secondary manifestations, at least no physician could in an examination find that they were, I think it does not modify our duty at all in the matter of clearing up the infections. For example, here is a person whom a physician may examine and find perfectly fit today and he goes out and gets thoroughly soaked in a chilly rain, and day after tomorrow is down with pneumonia, because of an abscess at the end of a root of a tooth. We can not get away from this situation. It has been demonstrated thousands of times in the trenches in France. If a fellow, absolutely fit for service, is reduced in resistance by lack of food, fatigue, lack of sleep, or getting soaking wet in the trenches, he may be down within forty-eight hours with pneumonia, which he would not have had but for a local focus of infection somewhere.

We must treat every case of chronic mouth infection as a definite menace to the health of the individual, regardless of whether he is thoroughly well or not at the time of our examination. We cannot do our duty by eliminating mouth infections for only those cases referred to us by a physician or who come to us with known secondary lesions. It is more important to clean up the mouths of those who have not the secondary lesions. Here is a chance in preventive medicine to accomplish a really wonderful thing, because if persons get these secondary effects, only as a result of local foci, we certainly will prevent the occurrence of these secondary lesions by the removal of the foci and we must do that, notwithstanding the fact that by doing so we will doubtless extract the abscessed teeth of many people who would go for years, possibly through life, without secondary manifestations.

Practically we must come to this: We must come to make our routine examination of the mouths of our patients in such a way that we will know what infection exists of either of these two chronic types and we must clear those mouths of infection. It must be a part of our routine examination to take full sets of mouth radiographs. If we are going into this thing to do our duty we must cut out a path for ourselves and do our duty as we see it. The man who studies these conditions and recognizes the pathological relationship between the local focus and the secondary effect will have little difficulty in determining his plan of procedure.

That is the problem in dealing with the group of adults which we have on our hands today. I am really more concerned with the other and the bigger problem that is before the dental profession—the problem of preventing the next generation from having so high a percentage of mouth infections. That is the biggest duty we have before us and that duty must start way back with the child about three years old in the matter of education of the parents of the child. We must develop a more systematic campaign of education in order to teach mouth hygiene, to train the young children in our public schools, to take care of their mouths so they will really keep them clean.

In Chicago, the Social Service Bureau of Cook County, the Chicago Board of Education and the Public Service Commission of the Chicago Dental Society have been studying for some months this large problem of education in mouth hygiene, or in the matter of healthy mouths in relation to general health, and we have worked out the following plan:

The Social Service Bureau proposes to encourage the establishment in every day nursery and in every community center, dental service and educational propaganda. We now have before our legislature a bill providing for the registration of dental hygienists the same as in Connecticut, Massachusetts, New York and New Jersey, and with the expectation that the bill will pass, we are planning to place trained women in these day nurseries to clean the teeth of the little children



under six who are left there by their mothers, and gradually to train the children to keep their own mouths clean and at the same time conduct an educational campaign among the poorer people, which will in the long run bear wonderful fruit.

It is proposed to establish similar service in our public schools. Our Board of Education is now considering the problem of putting women hygienists in the public schools of Chicago to clean the teeth of the children in the earlier grades and give them tooth-brush drills and educational talks. We believe this is much more important than to increase the dental service in the public schools. We are substituting a preventive service for a reparative service.

We propose in Chicago to have these dental hygienists examine the mouths of every child, regardless of whether they can afford to pay or not, without charge, to clean the teeth of every child without charge and give every child tooth-brush drills and short talks on the relation of clean mouths to health. Dental service will be given only for those children whose parents are not able to pay for it.

As a part of this work with the children under six years in the community centers and during the grade school period, there will be conducted a campaign of education intended to reach older children and parents and it is hoped that it will bring a tremendously larger percentage of our people to take care of their teeth and to go to dentists often to have them looked after. This is the really practical way to advance the problem of preventing chronic alveolar abscesses and pericementitis, by getting a larger percentage of persons to come to the dentists as a regular thing in order to keep their mouths healthy. We can get at the cases earlier, watch them more closely and prevent the occurrence of serious disease.

This is a tremendous problem, one not to be worked out in a few months or a few years. As applied to any group of schools, it will take at least five years to get it on a proper working basis so that results may be counted. I know something of what has been accomplished in Bridgeport, Conn., and I know it is going to be very worth while for the Kansas Association, especially in view of the passage of your recent law, to plan to go a little farther in this problem, in order to be able to give the additional service by dental hygienists in your public schools.

Above all things I think that the dental profession ought to come to realize that no one of the many lines of endeavor which have been preached to us in recent years is going to, of itself, accomplish the thing we want to do. We should realize that we must combine the education of the parents and the care of the mouths of the very small children, under six, the care of the mouths and training the children in the grade schools; we must preach and practice oral prophylaxis, and make use of every possible means in our practice to prevent the involvement of

pulps and to prevent or cure inflammations of the gingivæ. We must combine on a great scheme of education for prevention, which will give us the opportunity to carry forward the next generation with a percentage of mouth infections so low as to credit our profession with real progress in the prevention of systemic disease.

122 South Michigan Boulevard.

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## THE IMPORTANCE AND SCOPE OF PARTIAL DENTURE PROSTHESIS\*

BY F. EWING ROACH, D.D.S., CHICAGO, ILL.

**T**O BEGIN WITH, that we may be better understood, I am going to define briefly what we mean by partial denture prosthesis and will differentiate between fixed and removable partial dentures. We have been in the habit of using the term "Partial Dentures" as applied to partial plates. It is my belief that this is not a correct or a broad conception of the subject. It is a terminology that I do not consider sufficiently broad.

We have been in the habit of speaking of partial plates and fixed bridges. I use the term "Partial Denture Prosthesis" as applied to all types of appliances, whether they be fixed or removable, that are artificial substitutes for the lost or natural teeth. Then we have subdivided those into fixed and removable appliances.

In the removable type of partial denture we subdivide these into partial plates and removable bridge work. For a better understanding in the discussion of these matters we will define a *removable bridge* as that type of removable partial denture that occupies the space previously occupied by the natural teeth and their supporting tissues and is supported by abutments or the alveolar ridge.

We will define a *partial plate* as that type of removable artificial denture that occupies the space formerly occupied by the teeth and their tissues and other surfaces of the mouth, and may be supported by both the abutments and the alveolar ridge.

I am going to make a very strong plea—endeavor to make it strong—for more and better removable appliances, more and better partial plates. It is my belief that we have come to that time when we can no longer employ fixed bridge work to the extent we have in the past. It also is true, in my judgment, that the time is past when we can make partial plates carelessly and in an indifferent manner as we have in the past. And then, too, in this connection we may say that the time has arrived

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\*The first of two lectures delivered before the post-graduate meeting of the Kansas State Dental Society, Topeka, April, 1919. (In justice to Dr. Roach, who has been touring the country lecturing and teaching, we will state that he has been too engaged to revise and rearrange this stenographic report, so if any errors or misstatements appear in the text it is not his fault.—EDITOR.)



when there is a demand for more partial denture construction of all types than there has been in the past. So, for that reason, it is our duty in serving our patients, to try and improve this type of service and make more of these appliances removable for the reason, primarily, that by the employment of the removable appliance we can minimize pulp complications.

If we resort to fixed bridge work as we have in the past, we will have to do more extensive mutilation of the teeth and more extensive pulp removal and consequently have more pulp complications. I know that the contention will be that the removable appliance does not give that same satisfaction to the patient that the fixed appliance does. I am convinced fully, in my own mind, that that is not a justifiable argument against the removable appliance. If the removable appliance does not afford the patient that same comfort and efficient masticatory means that the fixed appliance does, it is the fault of the operator and not of the system.

You may say that is a rather broad statement. I realize that, but with that statement made, I am going to give you what, in my judgment, are the reasons for the betterment of the removable type of appliance.

First, and foremost, I believe that the casting process has done more to make possible the betterment of this type of work than anything else. Without the casting process I do not believe it would be possible to make removable appliances with the degree of satisfaction and in the short time that we can make them today, so that I feel that all credit is due to the man that gave us this splendid process for our use in partial denture construction. Dr. Taggart is the man, without a doubt, that brought this splendid process to the practice.

I am sure, that among the first things that many of you did after the casting process was given to you, was to use this process for making clasps and saddles and the various forms of appliances that we were using in our partial denture construction.

But there were other things that were necessary to perfect the removable appliance and while we were getting fairly good results with our clasps, one additional feature has made this work better and that is the formula of gold given us by Weinstein, of New York. This material is a very superior character for clasps. Our ordinary clasp material is not to be compared with this platinum-palladium alloy of the Weinstein formula. In addition to this, in my own hands, a material known as complaster, or some of the disappearing plasters, has contributed very materially to the simplifying of the technic in constructing the various forms of clasps and saddles and combinations of saddles and clasps or complicated parts generally in the construction of removable appliances.

I merely mention these features for the reason that you may question, in your mind, why this claim that the removable appliance can be made in a way that it is a competitor for fixed appliances in service and why,

before, we have not been able to make these appliances generally that would compare with the fixed appliances.

I'd like to make my position clear with reference to these two types of appliances. I have no quarrel with the fixed bridge, properly made and judiciously selected. Not at all. I wouldn't have you believe that I am condemning fixed bridge work. I still believe there is a field for properly-constructed fixed bridges. But, on the other hand, I am fully convinced that there is entirely too much fixed bridge work done, and particularly is that true in the light of the present-day knowledge of the oral sources of focal infection.

If we are going to make fixed bridges, let us make them conservatively and carefully and let us not, in following up the craze, if you please, that is running riot in the profession today of extracting teeth, take out these teeth that show that they may be the source of focal infection, the various types of conditions that occur around these teeth either from abscesses or pyorrhea pockets that may necessitate the removal of these teeth, and then jump from the frying pan into the fire and mutilate other teeth adjacent to these spaces for the purpose of putting in fixed bridges, and make that patient liable to the same condition of this source of focal infection.

My plea is for making these appliances removable in order that we may be conservative and avoid this extensive tooth and pulp destruction.

That is the burden of the thought that I have in mind and wish to present to you at this time. That is the idea of conservation of the natural tooth. As I say, we have been in the habit of supplying these cases, where we have patients with teeth out, with either fixed bridges or partial plates. The fixed bridge, to my mind, has been the most abused of the two. I believe that our patients have suffered more abuse from the fixed bridge than they have from the partial plate and yet, on the other hand, I believe that our patients have gotten in their own minds a better service than they have from our partial plates. That is, the patient thinks he has better service, that he is better satisfied with fixed bridge work than partial plates, so, for the reason that the patient has been better satisfied with the fixed bridge and then, too, for the reason that the fixed bridge has been the means of a comparatively simple procedure of supplying these missing teeth, and we have been able to put this type of appliance over and get away with it easier than we could our partial plates, it has been used in a great many cases where partial plates should have been used.

I don't like to get up before an audience of intelligent dentists, which I recognize men of the Kansas Association to be, and make the charges that you have been guilty of putting in fixed bridges for these reasons, and I don't like to insinuate or to make the charge that any set of men has been guilty of doing this work for these reasons. There are other reasons that I might enumerate that we know very well that men have



taken advantage of and have used fixed bridge work for—for the dollars and cents advantage, for one—but we assume that there is no one who is a member of this State organization that would be guilty of such conduct. We believe that every man that is honest is not doing this type of dentistry for the sake of the dollar. We believe that every man who has any appreciation of his profession is not taking that advantage of his patient. We believe that he has his patient's welfare first and foremost in mind at all times in the procedure that he follows. But, regardless of that, we know that we have made use of the fixed bridge work in a great many cases where a partial plate should have been used.

I believe in a more extensive use of partial plates for the reason that the partial plate has distinct advantages over any type of fixed appliance. Of course the advantages that we have proved of the partial plate also may accrue to the removable bridge but there has been very extensive misuse of the removable bridge work. A great many of us have made and put into the mouths of patients what may be called removable bridges that have been very poorly engineered. The engineering problems have been very wrongly understood.

This work is very largely the successful application of removable appliances; all types of partial denture prosthesis is a question of engineering. If we do not take the time to study these cases and solve the engineering features of them, study the stresses and construct our appliances to counteract those stresses and to minimize the strain, the leverage upon the natural teeth, we are not doing for our patients that which is best, so that, as I say, the removable bridge has been abused for the reason that we have wanted to avoid that type of an appliance that may be called, properly, a partial plate.

We have done this for many reasons, one of the principal ones being the objection, the preconceived prejudice of the patient to partial plates or removable appliances. Most people have a prejudice against partial plates, false teeth, as they are called, so that for that reason, I believe, many times removable bridges are put in for the sake of satisfying the minds of our patients, and we have used them when a partial plate should have been used.

The reason is that with the partial plate we have the opportunity, that advantage also, of overcoming leverage, minimizing the stresses that will be exerted upon the natural teeth. We must have plate areas and extension of our appliance to other parts of the mouth very frequently in order to have the appliance sufficiently supported against the stresses of mastication. I have talked many times with men who have the idea that they can put in, because it is a removable appliance, a saddle in conjunction with the abutment anchorages; that that saddle offers sufficient added support to the appliance, that it is not necessary to put in a plate. I know I have had that brought to my mind many times where removable bridges have been put in extensive long spans,

from cuspid to third molar, for illustration, having no part of the appliance extend to the other side of the arch to resist lateral torsion.

It is my belief that the removable bridge, because it has a saddle of an ordinary area, is of but little value, so far as the saddle supporting the appliance is concerned; very little added resistance to the forces of mastication, and it is that lateral torsion that is the destructive force in the great majority of these cases, so that if we are supplying the case from the cuspid to the third molar in the upper jaw, we may just as well make that appliance fixed as to make it removable, if we don't give to that appliance some additional support other than that which we may obtain by the use of the saddle.

Of course, in a measure that may be very materially different, under favorable conditions; but the conditions must be favorable and our saddle area must be increased very materially over what may be considered many times a proper sized saddle so that, as I say, we must study these cases and we must study them from the engineer's viewpoint in order to get the best results.

With reference to partial plate construction, I am sorry to say that it has been my observation that a large majority of the partial plates are made from one single impression taken of that mouth, and the appliance constructed upon casts made from that one single impression. I don't believe that it is practicable to make partial plates in this way that will be anything like what they should be. It is my belief that if we take our impressions of the various individual teeth that we are going to attach to, and we make that apply particularly to clasp construction, and then take impressions of those various saddle areas, the spaces where saddles are required, and make these appliances in sections, take the impressions in sections, make the clasps separately and the saddles separately and then assemble those in various units, assembling step by step and piece by piece in the mouth and securing accurate relations so we have co-ordination of saddle and clasps, and construct those cases in this way by care in the details of the construction, that we will get very superior results over the type of appliance that is made from the impression taken *en masse* of the entire mouth, and I want to make a strong plea for the construction of more of these cases.

The public have gotten to the point where they believe that the only type of appliance that they will get comfort and satisfaction out of is the fixed bridge. We can no longer do this type of construction. We must make these appliances in a way that we can avoid this tooth and pulp complication, and in order to do that then we must make better partial plates and removable bridges.

Let's see how we can do this type of construction in a way that it will satisfy our patients and will meet the requirements and help us to face this very serious problem at this time. Unfortunately, too, a great many of the profession are sending these cases to the laboratory, the den-



tal laboratory, taking an impression and a mush bite, many times a combination. I have gone into the laboratories in Chicago to see what kind of impressions and what kind of bites, etc., are sent to the laboratories, and what kind of work was being done by the men that were sending these impressions and bites to the laboratories, and it is a lamentable fact that a great many of those cases come into the laboratories with a combined, or a combination impression and bite in beeswax with a request to make a partial plate. Is it any wonder that partial plate work has a black eye compared with the tin can and mother hubbard gold crown and fixed bridge construction? Is it any wonder that this type of appliance is condemned and shunned by the people? It is a wonder to me that people can wear any of these appliances at all. It is unfortunate for us that the human being is so adaptable that his mouth fits itself to these things.

My plea is to spend the time making these appliances better and do more of this work ourselves. It is a fascinating work that I think any man in dentistry would prefer to do—by all odds it is a much more pleasant practice than filling root canals. If there is anything in the world harder than filling root canals and doing it properly, I don't know what it is.

You must cultivate that interest and work out the problems of construction and then you will find the most fascinating and most satisfying part of your practice. If you are going to follow the old plan, the plan that is resorted to so often, of taking these impressions in an indifferent way and sending them to the laboratory across the country, and then having an appliance come back that it will take you weeks to fit the patient to, instead of making the appliance to fit the patient, then I don't blame you for using bridge work.

But it is my hope that at this time of this great need, our profession will take hold and become interested in this work that we may make good. There never was a time in the history of the profession where we have been in the position, and where we have been looked to to do our part in the service of humanity and the healing art, by the medical profession and the public, as today. We are on trial and if we fail to meet the requirements of supplying these missing teeth in a way that we are going to minimize this mouth focal infection, then we fail in that which we are expected to do. It is my sincere belief that we must better our partial denture prosthesis, both fixed and removable, if we are going to come up to the expectations.

I am going to refer briefly to a few other points that I think should be considered with reference to this phase of the subject. In the first place what are the advantages of the removable appliance? Most of you are familiar with the advantages of the removable appliance, but let's briefly review them. There is no question but what it is a more

sanitary appliance. That is, I believe, a statement that no one will question. There is no comparison at all between the removable and the fixed appliance when it comes to the possibilities of tissue restoration, restoring lost tissues to normal condition. A removable type affords the possibility of making restoration both for cosmetic and for comfort sake. The removable appliance also offers a more convenient means of repair in the case of breakage. The removable type is also, as a rule, less in the way when it comes to the repair of the remaining natural teeth.

There are a number of other advantages of the removable appliance, but the main thing, the principal thing, is that by the use of the removable appliance we minimize tooth and pulp destruction.

It is a more conservative procedure, so that with those advantages, which are only part of the advantages which we might mention, it seems to me that the removable appliance certainly deserves a more extensive place in practice than it generally is given.

I think it is hardly necessary, and yet I am going to refer again, briefly, to the arguments that are brought constantly against the removable appliance, and I don't believe that it is an argument that has any foundation, and that is, that the removable appliance—I am speaking in a general way now—the removable bridge work or removable appliances are very much more expensive of construction. You may say that we should not consider these things. That is true. We should always try to do for the patient that which we believe to be the best for him, regardless of the cost; but that is impracticable. It frequently is possible to give the patient a form of appliance that is serviceable, possibly equally serviceable to some type of appliance which would be very much more expensive, but the point I want to make is this:

It is my wish to combat the prevailing idea that in the construction of removable bridges that the removable bridge can be made, or the partial plate can be made, with no more expense to you than fixed bridge work and, taking cases as they come to us on the average, I believe that they can be made with less expense to us and with equal service to the patient. And if that be the case, I don't believe that there is any reason for the employment of fixed bridge work in so many cases.

The fact that we can use the natural tooth without mutilation; the fact that we can supply these appliances with cast clasps or some type of clasps, it is possible to make these casts, I say with less cost of time, and that is our principal stock in trade, than for fixed bridge work, for the reason that you are avoiding the root-canal work and you are not only saving time but you are saving yourself and your patient the chances of that tooth becoming a source of focal infection.

#### THE CAST CLASP

We will now take the cast clasp. The casting process and the material we have to carry out this form of construction make possible



a most universal system of supplying these missing teeth without extensive tooth and pulp destruction, so that I am a believer in it and am going to spend the most of my time here to describe the uses of the cast clasp for the reason that I believe that the cast clasp is the most universal attachment for you. There are a few special cases, isolated cases, where we must use the various types of attachments on vital teeth, but as a general proposition the cast clasp in its various forms affords the most universally-dependable form of attachment to the natural teeth.

I am speaking from a personal experience in my own private practice, as well as a very extensive observation of this type of construction in the large clinic in conjunction with the college work where I have occasion to see hundreds of these cases. For that reason I am a great believer in the cast clasp.

Now, then, if you are worried about these cases that come to you with teeth that are abscessed, have pyorrhea, or any condition that may justify your questioning leaving that tooth in the mouth, you won't have to worry about these cases as much as you used to. Of course we always followed the old practice of saving every tooth we could. Regardless of what that may be, we are not sure yet, that every tooth, every non-vital tooth should come out. I can't see that yet. I know a great many of the best minds of the profession have come to the conclusion that every non-vital tooth should be extracted. In many of these cases we do feel, without a question, a justification in their removal. The fact that we are having to do this to the extent that we are, does not worry me so much as it used to. I used to lay awake nights grieving over the loss of a tooth, but not any more. If there are a few good, sound, healthy teeth in the mouth, I feel that I can supply that patient with something that is dependable and free the patient of that condition, and supply him with a partial plate in a way that they will be safer, and for that reason it is not the grief that it used to be to have to take out these teeth so that it is quite a satisfaction to be able to use an appliance that is so simple of construction and so serviceable to the patient.

I believe, then, in the cast clasp. Before going into the technic of the cast clasp I want to refer to a few fundamental principles that underlie clasp construction generally. Assuming, then, that the cast clasp is the most universal type of attachment that we can use in supplying these cases with artificial substitutes for natural teeth, let's understand the principles of cast-clasp construction generally.

First, if they are going to be what they should be as a means of supporting these appliances, holding them in place and giving to the appliance the proper support, we believe that the clasp should fit the tooth accurately. That is a general proposition, a general statement. Not always should a clasp fit the tooth accurately, but we believe as a general proposition to carry out this plan or system of universal attach-

ment to the natural teeth without mutilation, that the cast clasp, accurately fitted, is the best.

In addition to that we believe that all clasps should be so constructed; I say all clasps—that probably is putting it a little strong; we believe that almost all clasps should be constructed so that the clasp will be held definitely and positively in one position on the tooth; in other words, some form of occlusal or incisal rest or resistance to the settling of the clasp, that it be held definitely in that position in which it was originally fixed. Then we believe that all clasps must have a reciprocal bearing on the tooth. We believe that all clasps should have a reciprocal bearing, adjusted to the tooth in its relation to the saddle so that there will be an accurate relation between the clasp and the saddle in order that we may have co-ordination of support.

We believe that all clasps should be made smooth and polished so that they can be kept clean by the patient. We believe that all clasps that do fit the tooth accurately, to be kept clean by the patient, must be left out at night; otherwise there is liability of damage following the employment of this type of clasp.

I want to emphasize and make clear the importance of these various fundamental principles regarding clasp construction. In view of the fact that we are taking this as our standard attachment, as our means of most universally anchoring our partial denture constructions, these principles should not be lost sight of.

I will take these principles up and discuss each one separately. First, with reference to accuracy of fit. The clasp of the ordinary construction, the indifferently-fitted clasp of the round wire or band or ring type, touching the tooth here and there, and many times not at all, is a very indifferent sort of appliance as a means of anchoring a partial denture, coming up in the vicinity of the tooth but does not take a definite, positive grip on the tooth. That type of attachment is not going to be very satisfactory.

So we believe then, that the accurately-fitting clasp is more efficient and more comfortable. It also affords this occlusal rest or some means of maintaining the definite relation of that clasp to the tooth to which it was fitted.

If we put on a clasp that fits accurately, and that tooth is a bell-shaped tooth, which all teeth are, more or less, and that clasp in a short time doesn't fit the tooth, it is, as a consequence, an improper means of anchorage. I know what is running through your minds right now but we will discuss that later, with reference to the settling of clasps on teeth. That is a question that has been very much talked of as to the definite form of attachment, one that has a definite, accurate, positive relation to the anchor tooth. We will discuss that later.

We believe that the clasps always should have a reciprocal bearing on the tooth. What we mean by that is that the clasp shall so encom-



pass the tooth that the tooth will be held within the grasp of that clasp, that the clasp should extend around the tooth to the extent that it is not a regulating appliance but is a positive means of grip on the tooth. (He pointed to chart here.)

Take, for instance, this illustration. That is an improperly-constructed clasp. The attempt to tighten that will simply serve to move that tooth out of its regular place. That form of construction, as a general proposition, is of no value. It should encircle the tooth so that it will grasp the tooth. That is what we mean by reciprocal bearing. Each of the wings of the clasp should reciprocally hold against the other wing of the clasp. We believe that is a principle that should be kept in mind at all times in clasp construction.

Then we believe that it is necessary, and this more especially applies to the cast clasp, that it be polished. We have seen many cast clasps made without polishing the surface of the clasp, making the clasp smooth and polishing it so that it is smooth on the surface next the tooth. A casting has always more or less silica attached to it and it is at best a more or less rough surface. If we leave that silica impregnating the surface of our clasp, do not polish it away and make the surface clean, it will serve as a catch for food particles and other foreign matter and will act as a very efficient grindstone against the surface of the tooth.

I don't take any stock, personally, in the claim that frequently is made that clasps will wear the natural tooth. I have yet to see a case where I was satisfied in my own mind that mechanical abrasion had occurred on the enamel of a natural tooth from a metal clasp of any type; I don't believe that. I believe that those surfaces where we have disintegration or abrasions of the surface of the teeth around clasps, are chemical abrasions or dissolutions rather than mechanical ones. I have come to this conclusion after a careful study of practical cases and some laboratory experiments that I have made to satisfy myself. I have taken this cast material, these golds that are used for casting, and made a disc, a small wheel of this material, taken a freshly-extracted tooth and revolved that wheel at several thousand revolutions per minute without any abrasion and I found that the cutting away or mutilation of the surface of the natural tooth was very slow indeed. I am not a believer in any great danger of mechanical abrasion to the natural tooth from the clasp.

But, to minimize that, or put that clasp in its best condition for service and minimize this possibility, it should be polished, made smooth.

Then, with reference to keeping these appliances clean and leaving the appliance out at night: We are talking now particularly and especially with reference to cases of clasps that are attached to the natural teeth. To my mind this is practically the only objection that can be raised to this cast-clasp: decay. I fully recognize that the cast clasp,

as we are making it today, that accurately fits the tooth and covers so much of the area of the tooth, is very liable to cause decay. It is a dangerous form of attachment to the natural teeth if we don't impress upon our patients this danger and take the precaution to put this clasp in a condition that it can be kept clean and insist upon them being left out at night. My experience in their employment leads me to believe that it is a perfectly safe form of attachment provided it is kept clean and especially if it is taken out at night, and I make it a point to emphasize this to the patients so that they will understand it without any question. Impress it upon them that if they don't take care of them and take them out at night that the teeth surely will decay around them and that if they do decay, it is their funeral and not yours.

There is no question at all about the danger and for that reason don't put in that type of clasp and neglect to put the responsibility upon your patient. People that are in the condition where they need these appliances—most people at any rate—are very willing to follow this plan of supplying the teeth, providing they are satisfied that they will get something that is comfortable and useful and they are willing to do most anything to prevent further trouble, further decay of those natural teeth.

Assuming, however, that decay does take place around underneath these clasps occasionally, shall we condemn the system? Shall we say it is a thing that we should not use? That it is a plan we shouldn't follow because we do see an occasional decay around them? I am not willing to give up cast-clasp construction because I see decay occasionally.

Then, too, let's be fair and reasonable—consistent in the use of them. Study your patients. There are certain classes of patients for whom we can put in these appliances, with a certain degree of safety for the reason that those mouths are in a state of immunity; and yet I wouldn't take a chance on the immunity of any mouth resisting the possibilities of decay around these close-fitting clasps. But, as I say, let's study the case and see what the indications are in that mouth for decay and then let's put our clasps onto teeth that we are sure are not already decaying when we put them on.

I have had occasion, several times, to observe the placement of these clasps on teeth that actually were already decayed. Decay already had started on the surfaces of the tooth under the clasp and I have had occasion to see and know of the cast clasp being condemned when it had been used under such conditions. Give the cast clasp a chance and don't condemn it because you may see decay occurring around it. If your patient is careless and you have decay occurring, I don't know even then if we are justified in condemning the cast clasp. I know that there are practitioners who believe that all natural teeth that are to be used as a means of anchorage of partial dentures, either by a clasp or some form of attachment, should be crowned as a precaution against the



subsequent decay of that tooth. To my mind that is a very erroneous idea, a very wrong practice. I would rather take my chance on the patient doing his part, and if decay does occur, then I will do what is necessary in the way of repair, filling or crowning or some reparative measure when that occasion arises.

#### TECHNIC OF MAKING CAST CLASPS

I am going to start in with the technic of making the cast clasp. I want now to give what to my mind is a very accurate, definite, quick, short technic of making the cast clasp. The cast clasp has been made as a general plan, or the plan that generally has been employed in making the cast clasp, to take an impression of the tooth or teeth, make an amalgam model, fit the wax to that model, remove the wax from the model and invest the pattern and cast the clasp. To my mind this is a long way round, a long route, with the added possibility of inaccuracies, making the cast clasp impracticable as a general proposition.

To my mind a very much better plan, and a very much quicker plan (of course we never are justified in employing a quicker plan unless it is with the same degree of accuracy) is to cast directly to the model. Of course this should be called a cast, but I will refer to it as a model. We are making our casting directly onto the model rather than indirectly, making the model of amalgam or cement or some other hard substance. In order to accomplish this we must have first an accurate impression of the tooth. Of course that same rule applies to the other construction where we make the model. First, we must have an accurate impression of these teeth. In making the cast clasp we believe, in all cases excepting the short spans where we are supplying only one or two teeth, that the clasp should be made separate; so let's take an impression of an individual tooth, or the individual teeth that we are going to clasp and make this clasp as a separate unit.

Now there are two materials, in my judgment, that we can depend upon for taking this impression of these teeth in following this technic; modelling compound and complaster. Any good disappearing plaster will do, but I know of none now that will do as well as complaster. This is a compound of potato flour and plaster of Paris. The difference between complaster and the ordinary plaster of Paris is that this material, after you have taken your impression, can be removed and separated from your model by boiling. There isn't the danger of breakage of your models that you would have if you used plaster of Paris.

I was very much worried for a considerable time over the molar clasp construction. Modelling compound, in my judgment, takes the best impression. Modelling compound for taking impressions of the individual teeth is the best material for the reason that you get a smoother surface, a smoother model, and the smoother your model, of course,

the smoother will be your casting, and wherever possible I prefer to take these impressions in modelling compound for this reason.

But the complaster is a much easier material to use, to manipulate in the posterior teeth and is a more dependable material. In the earlier uses of these materials I designed this little hinged tray (pointing to chart) for the specific purpose of handling modelling compound. I felt if I could make a box-like tray with a flange extending down into the interior of the tray to form a line of cleavage in the modelling compound, that would cause it to break more easily and divide it into two halves, by having a tray that was hinged and box-like so that the material would be confined to all surfaces and designed specifically for taking impressions of single, isolated teeth.

Those are the cases most difficult. Take a second or third molar. To get an accurate impression of all surfaces of that tooth has been, to me, the most difficult impression to take and I felt if I had a tray that I could leave partially open and by forcing it down on the tooth and then closing it, I could secure an accurate impression as it would force the material.

But, upon repeated trials, I found this was not reliable. Modelling compound is one of the most treacherous materials to use as an impression material, if it is under cover, where you can't see it. You will get an impression of the tooth that will, to all appearances, be a perfect impression, but the trouble with the modelling compound is that it is so difficult to get it of uniform plasticity and even though you do, and confine it to all surfaces, when you are taking an impression with that material *en masse* it is likely to bulge out, or get a fold in it, or force away from the surface and you will be deceived. It hasn't the uniformity of plasticity and flow that complaster has.

I was very much concerned as to how I could take the impressions of these molar teeth, and it was upon the discovery of this complaster that I found the ideal material for this purpose. By the appropriation of the use of the tray and complaster, I found this one of the most simple impressions to take, the impression of the molar teeth where we have an isolated tooth, standing alone, using the box double-ended tray.

About all, then, to take the impression of the molars with complaster, is to acquaint yourselves with this material, its setting qualities and its proper manipulation and placing that material into the tray and locating the tray so that the hinge of the tray or the central dividing sectional portion of the tray will be centrally located over the tooth that you are taking an impression of.

(He pointed here to the chart).

This represents a single molar. If we are to take an impression of that we must use the box tray. All we need to be careful about is to place the tray so that it will be centrally located on the tooth and so the separating line of the tray will close on the tooth at its greatest



diameter. After the material is hard, pass a flat instrument into the joint and by rotating it slightly the tray will be opened up and easily released, taking the material out in two halves.

The flanges that you see in the tray, extending on the mesial and distal ends of the tray as well as the occlusal, offer the dual advantage of making a line of cleavage—and that breaks the material more easily—and then holding the material in those two halves of the tray by reason of these flanges, so that with this exception the tray is not materially different from other impression trays of the hinged type that we have been in the habit of using. I think that is possibly all I need say with reference to taking the impressions of the molar teeth with this plan.

We come now to the impression of the anterior, or the use of modelling compound. Modelling compound is the best material and yet the most difficult material to handle, and in the use of the modelling compound we believe that it always is necessary to make, or to take the impression, in sections. It is desirable in all of these cases that we have a clasp that fits the surfaces accurately and in order to get that—and the type of impression that is most difficult to take, is an impression of an anterior tooth where we have a tooth adjacent to it—I don't believe it is ever practicable to take them with modelling compound or any other material *en masse*, using a thimble or a tray or a cup that will confine the material and take it and withdraw it.

That kind of an impression is of no particular value. In order to get the impression of these anterior teeth and get them accurately, we believe that modelling compound is the best and by taking it in sections we can obtain very dependable impressions. Modelling compound can be employed only where you can place a section of that modelling compound and see all of the surfaces of the impression that you have taken; that is, if you want to have a dependable impression.

I never have had a more difficult type of impression to take than that of the cuspid tooth, where the lateral incisor was present. The difficulty in securing this impression is to get an accurate impression of the space between those teeth. It is entirely out of the question to take these impressions in complaster or plaster of Paris for the reason that this narrow septum between the teeth will break up into small fragments that are impossible to reassemble.

In order to secure an accurate impression of that surface, in order to make this mesial-distal grip clasp, the clasp must fit the tooth accurately on the surface and the nicety of that adaptation and the gripping power of that clasp depends altogether on the way you fit it to the mesial-distal surfaces of the tooth.

It is necessary, in preparing this tooth, that you slightly dress away the contact point, to secure an accurate impression of that surface, and it is desirable that we have an accurate impression of the concavity, a slight amount of the concavity of the tooth just below the plain surface.

We depend on that, the accuracy of that impression, of that slight concavity and slight convexity of the clasp which will just spring enough that when it passes and takes the proper relation to the tooth, we will have just a small amount below the plain surface in the depressed or concave surface so we have that tightness of grip that is so necessary in many of these cases.

The plain frictional bearings of these clasps, particularly in short teeth, do not give that security of grasp on the tooth that is so desirable, so this impression is a difficult impression to take.

I think you are all possibly tired by this time and the president has requested me to stop at twelve o'clock. We had better leave this impression for another time and I think it would be just as well for me to stop here and we will take up the taking of the impressions for the mesial-distal grip clasp, explain the principles of it and the combination cast and the various types of the cast and wire combinations, explain the details of the technic, impression taking, waxing up castings, etc.

If I only can get the members of this society to understand and to appreciate the value of the cast clasp in this work and to make the cast clasp and to use it properly, I will have accomplished something, at least, in the way of a betterment of this service to our patients.

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Note: The second lecture by Dr. Roach will appear in another issue of *The Summary* as he was unable to get illustrations ready for this number.—*Editor*.

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### **An Easily-made Matrix Band**

A band that fits and holds for use where ligatured matrices slip off and copper rings are too thick and tedious to manipulate. From a sheet of ordinary steel matrix material cut a band of sufficient width to reach from gingival of broken tooth to occlusal plane, and sufficient length to allow an overlap of one-sixteenth to one-eighth of an inch when placed about the tooth.

Adjust the band. Remove band, trim to avoid injury to the periodontal membrane, and replace band in same relative position as before. Slip over the band a wire loop fastened in a broach holder. Adjust and twist the wire until the band grips the tooth. Let broach holder remain attached for use as a handle to remove and replace the matrix as desired, also to hold lips back and matrix firmly in place while the amalgam is being packed. When the amalgam sets to trimming condition, twist the wire off, straighten out the band and slip it out through an interproximal space.

The ease of making, adjusting, retaining, and removing this band are its recommendation.—*J. E. Baldrige, Dental Digest*.



## HOW TO DOUBLE YOUR INCOME\*

BY HARRY J. BOSWORTH, CHICAGO, ILL.

**I**T IS WITH A GREAT DEAL of pleasure and gratification that I have this opportunity to come before your society. I believe that I have a message that, if you will take it to heart, you will take home something more than anything you have ever taken home from a dental meeting.

I have been associated with dentists for the last thirty years, and it has been a great surprise to me to see the dentists all trying and working for better dentistry and then going home and selling it at the same old price. I believe that any man here can go home and practice with less effort and double his income. That is a slogan I have used, and I have not had to back water on it from any man I ever have worked with; it can be done.

This isn't anything magical, or particularly difficult. It is just trying to put dentistry on a business-management plan—using plain horse sense. You are in dentistry for a livelihood. True, it is a profession, but something must come out of it to take care of the present and the future, and you must use figures to guide you. Figures tell the story. Business men know they must make a profit, and they arrange their prices so they get it. They know what they must do each day to show a profit, and figures tell the final story.

When the dentist's day's efforts are over, just before he closes his day's business, he should know what his production was in completed or incompleted work. He has no right to go through a whole year before he finds out if he is making or losing money.

If there is anything that I say that you are in doubt about, ask me in discussion, and I think I can clear it up. There was a time when you couldn't talk the professional side along with the money side, but we are talking it now, because the needs and the conditions at the present time make it necessary.

I say any man can double his present practice if he will only relax long enough to make an analysis of himself from an outsider's viewpoint. It is not a question of large, sensational fees, but simply good, consistent fees, that in all cases show a profit.

I make the statement that any man can double his practice, starting the day he goes back home, if he will just relax and watch figures. A man who makes a statement of that kind and can't live up to it, couldn't last long. But I will back it up with my money against your time. If

\*A lecture delivered before the Post-graduate meeting of the Kansas State Dental Society, Topeka, April, 1919.

I can do that, it is worth while paying a little attention to, isn't it? There are in this audience, some men that have tried it and know. The plan means you really work less and make more, by good, consistent fees, that in all cases show a profit. We hear much of men talking about the big fees they get. As I go into a dentist's office and ask him how he is doing and how he keeps his accounts, he always will reach for some certain account, the exceptional case or fee. But I want the bread-and-butter every day case. Give me your appointment book for three or four days back, and we will trace every one of those charges and see what becomes of them and the result will be that you probably will find nine-tenths of your efforts paying no profit. I really think that big, sensational fees hurt dentistry, especially unless they are agreed upon beforehand.

During my observation into the many dentists' books and plans of handling the fees for the different classes of work, I find with few exceptions that there are six or seven things that dentists make a profit on and the balance are done at a loss. I want to show you from a chart I have compiled what those things are:

## CHART

PRODUCTIVE	NON-PRODUCTIVE
1 Crowns.	8 Treatments.
2 Bridge work	9 Plates
3 Gold inlays	10 Silver fillings.
4 Synthetic fillings.	11 Cement fillings.
5 Lingual bars.	12 Examinations.
6 Pyorrhea.	13 Cleaning teeth.
7 X-rays.	14 Stopping toothache.
	15 Extracting.
	16 Anesthetics.
	17 Baby teeth.
	18 Broken appointments.

The first seven really are in the profit class. In my time of association in dentistry, these seven things have been the new things that have come into dentistry. If a man has something new to spring on his patients he seems to be able, and have the courage, to set up the fee at a profit. Possibly if you could only call these other non-productive operations by some other name, you could make a profit on them too.

We will try and analyze each non-productive item separately:

## TREATMENTS

Here is an effort that doesn't get a dentist very far. Of all things a dentist does, treatments are the most trying and least productive. The average dentist, when he finds a tooth is to be restored and needs treatment, will say, after the patient has asked the price: "This will cost you, to treat and fill, five dollars." Right there he has committed an error he can't live down. He said that he is going to treat and fill that tooth for a given fee. He doesn't even know whether he can ever reach the point of filling it or not. He has taken on a contract that he



doesn't know whether he can live up to or not. He should have said, "I will restore that tooth for so much, plus the treatments." The dentist's shoulders are not broad enough to carry the grief that goes with treatments; that comes with guaranteed cures.

That is just what you do when you say, "I will treat and fill for so much." I have taken men from the Ghetto in Chicago, where we have many dentists that practice the greatest cotton-turning dentistry in the world. I have taken many men out of that crowd of dentists and made them charge for each treatment. The patients used to come in any old time to have that cotton turned, but now they don't come so often, because it costs a dollar.

Charge them every time they come to you, as would a lawyer or a physician. The service has been rendered. It isn't your grief. The treatment is one thing, the restoration is another. What would you think of a surgeon that would treat or operate on a leg and furnish the wooden leg, all for one fee?

I don't know how much treatment you do and how much success you get from treatments, but if it is worth while doing it is worth being paid for. I will show you a little plan of keeping track of those treatments and if you will keep track of the time you spend on a patient you will be surprised to see how little you get out of your efforts, and will have the courage to ask a profit fee.

#### STOPPING TOOTHACHE

Here is an operation, *stopping toothache*. If you were in a hotel in the middle of night and had a toothache, you would give a good deal to have that toothache stopped. You get into a dentist's office early in the morning and he stops the toothache and when you ask the price he says, "Oh that's all right." To himself he says, "I'll get you next time."

The service rendered is as great to the suffering individual as if you spent hours on that patient. There is only one class of people a man can go to to have a pain of that kind stopped, and that is the dentist. If it could be stopped at the bar it probably would have been done, as he had in all probability "been there." Dentists had to go to college, spending thousands of dollars—three years' time—and several thousand dollars in equipping the office, to learn how and be equipped to stop a toothache, and yet he is willing to pass up a fee for the service, because the service seems so little. Stopping toothache is a service that means little as far as time is concerned, but as far as service and end-results to the individual, it is unlimited.

#### PLATES

Here is another one—*plates*—the wooden leg of dentistry. The court of last resort. The patients come to you and you almost promise they can do anything with those teeth they could do with their own.

They feel they can come to the dentist and he is going to give them something equal to or better than their own teeth.

The way I'd make money on plates, (say you get twenty-five dollars for a single denture), would be to give the patient five or ten dollars and let someone else make the plates. You'd at least have the gratification of being able to meet them on the street and with no apologies, look them in the face. They couldn't go home and tell the rest of the family you were no good. Make better plates, spend more time with them, get a fee consistent with the service and responsibility, or don't make them.

Just think; there are men in this great profession of dentistry that have taken every single item out of this non-productive list and specialized it, and have made a fortune for themselves, as far as it can be made in dentistry. They have made each one a big practice in itself and the average general practitioner can't even make it pay when he has them all with a general practice.

Plates is one of the biggest items of lost motion in a dental practice. This plate bugaboo is one of the worst things a man has to contend with. He can sell more than he can deliver.

I went into a dentist's office in South Bend, about six months ago. It was five-thirty. He said "I wish I had someone to make me some plates." Having six full upper and lower impressions on hand. Just then the telephone rang. "Doctor, will you be there a few moments?" He waited and she came in and had a plate that looked like a map, it had been repaired so many times. "What will it cost to repair it, Doctor?" "A dollar." "When can I get it? I have to have it tomorrow night; I am going to a dance." "All right."

He didn't know where he was going to get the six uppers and lowers made—and no more did he know where or how he was going to get the repair made; yet he agreed to her terms at a loss, and promised delivery, which if he fulfilled it he must do it himself and neglect other work. The average man fills his office with dentistry that he can't deliver. The man that is handling his practice right will take five or six patients each day and serve them and then he will begin to get something out of dentistry.

#### EXAMINATION

In medicine this is one of the biggest things we have: The diagnostician is the man that gets the big money. In dentistry he gets nothing. If your opinion as a dentist is worth anything, it is worth charging for. There is no harm in setting up a fair fee, making it a serious matter, rather than an easy task, because an examination doesn't mean merely taking a mouth mirror and explorer and going into that mouth. It means more than that and you know it. If it does mean more than that and you give your opinion as a dentist, inasmuch as they have confidence in you, which is evidenced by the fact they are there, it is worth being



paid for. What would you think of a lawyer that you could go to and say, "What do you think of this, and that?" Why, you'd pay for the advice. That's the only thing he has to sell. Knowledge—Service.

#### CLEANING TEETH

I have seen hundreds of dentists' books and no charge made for cleaning. It usually seems to follow a big job. It seems to be a thing put in for good measure, to kind of take the sting out of the final fee. Cleaning teeth, probably, is one of the biggest things you can do for humanity, if you do it right. And it is probably one of the poorest things if you do it wrong. Why not do it right and get paid for it? My thought is this: If they want an ordinary cleaning, such as you can do for a dollar or two, tell them to take a toothbrush, as they can do more for themselves in this manner than you can afford to do for the one or two dollar fee. And when they are ready for a real polish, scaling and prophylaxis they can come back.

I am not talking on the professional side of this subject, but I am trying to ridicule some of the things you do, so you will take them to heart. They tell us, preventive dentistry is the next step. You cannot teach people any more about their teeth than with the cleaning operation. This service in my estimation is one of the biggest things in dentistry. Yet we have big dentists that will do it for a dollar or for good measure.

#### EXTRACTION

I don't think there are enough dentists to take out the teeth that should come out, let alone put many in. The great Mayo Institute in trying to seek relief to complete their physical diagnosis, had to turn to the dentist for help. They now have a dental section where they make radiographic and clinical diagnosis, and in order to get results must necessarily take out some teeth and make curettements, and in many cases this procedure corrects the difficulty medicine and surgery failed to accomplish; and yet many dentists take teeth out for fifty cents and make a manicurist's fee out of it. You can get from five dollars up to almost any possibility for taking out a tooth, if you make a real surgical operation of it. What operation that likens to it would a surgeon do for five dollars? Surgical extractions bring surgical fees.

You go in the mouth where so much infectious material exists, take out teeth, run the risk of infection to yourself and to the patient, the danger of a malpractice suit. The possibility of grief from that kind of an operation is almost unlimited. Don't ask big fees, but ask something consistent with what they are doing in surgery for a like operation.

#### SILVER FILLINGS

You are using silver and it probably is right that you should, or you would not use it. Why should it be sold for less than gold? There

seems to be some magic connected with the word "gold" that enables you to get more for gold than silver, while one serves the patient equally as well as the other. There are men telling us today that silver is a better tooth preservative than gold. We know by the comparison of weight that there isn't over possibly fifty cents difference in a like filling of gold or silver. One you will put in for two dollars, the other for eight, or whatever amount you happen to be thinking of. Why the difference, unless you are selling merchandise instead of service? If silver is indicated and is the proper material, it's no concern of the patient what is used and the fee should be the same for one material as the other.

#### ANESTHETICS

A dentist will put a patient to sleep (extraction) for two dollars. He will take out a tooth without pain, using a local for a dollar. If you take a physician along to give an anesthetic he gets five dollars. If anything happens to the patient in a dentist's office, it puts the dentist out of business; with the physician it means nothing—they expect them to die in a doctor's office.

That operation is worth at least five dollars. Try it on your first patient and see how it works out. They'd give their life to have the tooth taken out with safety and without pain, especially before it is taken out.

#### BABY TEETH

The president of our State Dental Society asked me to put baby teeth on the non-productive list. Caring for children's teeth caused him more trouble and paid less because parents expect treatment to cost but half price. There is probably no time in a patient's life you can do as much good, and under those conditions, you should make a charge in keeping with the good you have done for the patient plus actual service. You can do educational work for preventive dentistry at this time. You may charge them a little more at the beginning but look at what you can save them later on. The average dentist takes out a child's tooth for a quarter or half dollar; the child kicks up the whole office. This half charge for children is only a habit which can be changed and will be if you realize the loss on these operations.

#### BROKEN APPOINTMENTS

This is one of the things most dentists will be able to master if they have the courage to take it in hand. If a name is put on your appointment book and not eliminated in a reasonable time, they owe you money. You may have to adjust that charge the first time but they soon come to know that you don't care for broken appointments. I don't believe any man would have trouble with broken appointments if he'd just have the courage to make charges and send out bills for them and have the courage to explain to the patients the injustice of any plan that does not provide for lost time patient alone is responsible for.



The average man has too many patients and he does not do justice to them or himself. The opportunity of improving one's condition in dentistry is almost unbelievable. One can hardly pick up a newspaper or magazine but they find an article about the teeth as related to health. Surely this means something to the thinking man. The moment you, as a dentist, get away from the mechanical side and get into the health side you will find it easier to get the diagnostic and surgical fees.

Take the army, navy, welfare organizations, the industrial concerns, the magazines, journals, newspapers—all are associating the teeth with health, and if you get to talking health rather than restorations you will soon get the patient's interest. I have spent a good deal of time at Rochester, Minn., lately, and I have seen five thousand people at one time seeking health, and more were talking teeth than any other subject. It isn't only at the Mayo Institute this is told them. If a dentist in talking to a patient could only cite these facts and dwell upon the results for health, it would be easy to have the patient look upon the fee problem with a favorable viewpoint..

My psychology of that is this: The average patient has not made any provision for dental fees. You will find in almost all budgets of expenses they always provide the doctor and occasionally the lawyer but they don't say much about the dentist because it was something that happened occasionally. But it means more to the public today, and if the dentists would measure up to what the public, the magazines, the journals and newspapers are doing they wouldn't have any trouble selling dentistry at a profit.

In all talks and plans for betterment of dental conditions the idea seems to be, educate the public—my belief is that the public is far ahead of the dentist and any educating to be done for better conditions must be done with the dentist.

It isn't necessary to sell dentistry at sensational fees; only necessary to put the non-productive work at the same price you have been getting for the productive work, but you have to know what this work costs and you can't know that until you know how long it takes to do it and what you can afford to work for.

When a patient comes to you the first time, the thing to do is to fill out an examination and diagnostic chart and X-ray the entire mouth. Then you have a foundation record always on file which is a wonderful record for the future, should you be called upon to serve that patient again. Make a study model, and from this go over the case carefully with the patient, giving him the necessary health talk, explaining carefully what your findings are and let the restorative work be only a means to an end. When your story is told in a language the patient understands, give the price for the work; that is, always figure cost of work plus treatment. This plan keeps you from wondering what the patient can and will pay, and it keeps the patient from wondering what your

charges are going to be, thus eliminating the possibility of misunderstanding, leaving a good taste in the mouth of both operator and patient.

You talk to a man and the question of fees will be brought up and he will say, "We have patients that don't say a word in regard to fees. They just pay the fee without a question." If you are absolutely sure that the patients that pay without a question don't talk on the outside you are all right. But wouldn't it be better to tell them beforehand?

You take the wife or children that come to a dentist. They'd be all right and let you go ahead and even agree to the price. But there is that old hard-boiled egg in the office that never had but ten dollars worth of dentistry done, paying the bills. There is that three hundred dollar bill coming in. Everybody within his range hears what a robber you are. He even tells that your dentistry is bad. He has it in his folks' mouths; he knows!

Why not let that bill reach the man that pays the bill every month as the work progresses and let him talk it over, as the work is being done? Boil it down to a business proposition. I go into clubs in Chicago, and when I say I am associated in dentistry they take the top of my head off. They don't know what it stands for. If they'd come in and make a contract and buy it like anything else there wouldn't be any trouble about the fee. You tell them beforehand.

One of the many things that causes a dentist grief is the fact that the patient is led to expect too much from dental restorations, especially full dentures. I liken this class of work to a wooden leg. When a person buys a wooden leg it is a question of the last resort, and is practically the only thing he can have. But the maker of the wooden leg does not lead the user of same to believe he can do everything he was able to do with his own limb. No, indeed not. He does not tell him he can run as fast as he could, kick as high as he could, dance as well as he could, or even walk as well as he could. He does tell him that if he is careful to try, he can get by, fooling some people, walking fairly well, but he must be patient and do his part to accomplish even these results.

So it is with a full denture. If the patient will do his part to try and learn to use them, he may be able to eat some things and fool some people some time, but he cannot do all the things he could with his natural teeth, and, at the very best, it is only the wooden leg of dentistry.

I think you will find patients that will go out of a dental office heaving a sigh of relief, "Oh, my dental troubles are over." They are not. They have just started. Why not prepare for that failure? It is going to come. Why lead them to believe you have finished with them forever? The teeth that nature gave them didn't stay forever; why should these?

The grief, in other words, belongs to the patient and not to the dentist, and should be so stated to the patient when the case is sold. Sell it at what you consider a profit and assume no grief—that is not yours.



The one big thing that results in satisfied conclusion at the completion of a big case is always to tell them the price first. This one practice will take the sting out of many cases when you come to make the collection, otherwise you are likely to be many dollars apart, and some times the patient has even the bigger viewpoint.

I am going to try and show you how we handle our daily efforts.

Find out how much actual time you have to sell, then determine how much you need each year in order to have the pleasures, comforts and leisure you are entitled to and must have in order to be happy in the practice of dentistry—plus a reasonable savings fund to care for the future. On the basis of fifteen hundred hours per year, which means six hours a day, if a man wants to earn \$10,000.00 per year he must set up \$6.00 an hour, or ten cents a minute as his minimum fee. The maximum fee will bring the result up over the amount set up as necessary. That means that you have patients and classes of work that will stand for greater tariff.

We use a daily efficiency sheet on which is copied, from the usual appointment book, the name of every patient who has an appointment and has not given a twenty-four-hours' notice of intention to cancel. Every name that is on this daily efficiency sheet there is a charge set up against, whether the appointment is kept or not. I set up a charge for all work done each day, whether partially completed or finished work in order to get on my books the production of each day, then that enables me to send a bill on the first of each month for all work done, and if there is any complaint it brings up the case for discussion before there has been any large, constructive work done which, many times, never fits quite so well as when they have some of their money invested in the case.

When we are working for a patient who must come back for a subsequent appointment, we at this time, decide what we are going to do at the next sitting, so when they come one or two weeks hence you know what the work is as it has been laid out. That one thing alone will guide and help you because you don't have to wonder where to start but go right to work without loss of time. You lay this work out here the day before the appointment, the assistant copies it on the Daily Efficiency and Day-book Sheet and she puts down the names and what work is to be performed.

Here is the time stamp that shows the time of each sitting. I don't think a dentist can afford not to keep time. That thought is not for the patient. It is for yourself. It is to check you and your office assistant. How much would that be worth to a man when his day's work is over before he goes home to know what his production was? I only ask you to conduct this the same as a contractor would conduct his business. He takes on work strung out over a long period of time and he says to you "You put down so much money;" and every Saturday he calls for so much to apply on the work done so far. I know that half of the den-

tists don't get their money until the work is completed. Suppose the patient dies, suppose you die, suppose the patient moves away or changes his mind. Maybe it is the preparation of a cavity. Suppose they go away. How can you set up a charge if you don't know how much time you had spent up to that time? How are you going to send them a bill? Why not make an entry as you do the work?

A man who is making shoes, if he didn't know what they had produced that day, wouldn't have control of that business. Because you jingle money in your pocket, don't believe that you have had a productive day. This Daily Efficiency Sheet tells whether it was productive or not.

I make a statement that a dentist can double his practice if he watches his figures, keeps an accurate list of the people he worked for, how long it took, then set up fees that show a profit. If you are not paid by the tenth of the month after the date the statement is sent out you don't have to go on with that patient. You don't have to cement that work in. I don't suppose there is a man here that doesn't have some difficulty in collection. I think that the Daily Efficiency Sheet, kept on a blank sheet of paper or any other way that you want to keep it, is the biggest thing ever for a dentist. Down at the bottom of the efficiency sheet is space for evening work. If he is silly enough to do evening work he has an analysis which shows it does not pay.

This is the diagnostic blank. We fill out an examination blank. We go over the mouth carefully with X-rays and with a study model and we set up a fee for whatever work we find necessary. If the patient doesn't want to go through with that we are entitled to a fee for the diagnostic work. That is our right. You were called in simply to find out what was needed in the mouth. You have told them in a language they should understand. You have set up your fee plus treatments that they can either take or leave and my psychology is that most all patients that come to the dental office are 75 per cent. sold. I don't believe the average patient that comes to the office is a shopper. I think they are made shoppers after they get to the dentist. I think the fact that they climb those stairs to see the dentist proves that they are sold. Interested, they have made up their mind a certain dentist is the one to serve them. They don't change dentists as often as other things. They are afraid to trust their health with everybody.

#### BROKEN APPOINTMENTS

We use a Daily Efficiency Sheet on which is copied from the appointment book, the name of every patient who has an appointment and has not given a twenty-four-hours' notice of intention to cancel.

That is fair enough. You give them time enough to cancel. If they don't cancel they pay. This plan makes for the elimination of broken appointments.



Always quote a contract price for all constructive work plus treatments, telling them the work is to be paid for as the work progresses.

Again, it gives you a chance to finance your business monthly without hardship, and it gives your patients a chance to pay for their dental service monthly, which is very acceptable to most people. This plan is followed whether a contract for work has been made or not, and the money so paid is applied against the agreed price. This helps the operator, teaching him how to estimate his cases, and proves up what cases cost to produce, which in itself will be a revelation to the hit-or-miss man, who has been guessing on his fees. The laboratory time of assistant and operator is carried into the Daily Record Sheet. When a man finds out what these operations are costing him, it serves to give him the courage to ask better fees and get them.

On the reverse side of this Daily Efficiency Sheet there is a provision made for stamping with a time stamp in an out time for every patient. This removes all guess work and the psychology is good. At the end of each day's work the assistant takes the Daily Efficiency Sheet and figures out the time spent with each patient, and sets up in lead pencil the minimum charge agreed upon. This is done to prevent the dentist from trying to analyze each case, and possibly setting up a charge at less than a profit.

When the operator goes over these sheets he will find certain kinds of work which will call for better fees and this will help out the non-productive time necessarily spent each day. This simple plan will not take over ten minutes each day, and when the day's work is over you will know who you worked for, the location of and the services rendered, the time put in on each case, the fees charged, the money collected, if any, the total number of hours you were able to get out of your day's efforts, the last but not least, gross production. This will give you a chance to go back over your day's efforts and if there is any lost motion you easily can see where it is and correct it. This Daily Efficiency Sheet is filed away in a binder, and becomes your original book of entry.

I don't believe any man can get the best out of his possibilities without a properly-arranged office consisting of two operating rooms, and the arrangement so that the patients cannot get to the operator until he is ready to see them.

I think the way a dentist meets his patient, is enabled to get to them promptly and get away from them without loss of time, spells the difference between success and failure. You don't have to listen to their talk, wasting time, if you have a good, efficient nurse or assistant and a room always ready for the next patient. Usually a man has an old outfit that he can use and the investment is not great and you have a fresh, tidy room for the next patient. Use them alternately. Let the girl handle everything but the dentistry.

The Daily Efficiency Card will show you where your waste time occurs, and the properly-arranged office will help you to eliminate the same. A man should have one or two lady assistants. By having this class of help who can do everything in the office but practice dentistry, it leaves the operator free to do the only thing that produces in a dental office, that is practice dentistry. When a man stops to do the things a girl can do, he is putting himself in competition with the two or three dollar-a-day help, an amount which he can make in twenty minutes, practicing dentistry.

I believe the operator and assistant should dress in a white uniform or gown, so they look the part before the patient.

Any man who tries these suggestions will double his practice. I know, as I have over one thousand men who have done so, many who have done as much in two months as they did in a year before they started watching and checking their daily efforts.

I have written an article outlining office assistant's duties, which I will mail gratis to any one interested. My limited time prevents my reading it to you now<sup>1</sup>.

Now, gentlemen, if you have any questions to ask I would like to go over this subject with you. I want you to believe that this comes from the heart. I know what you can do. There isn't a man here that cannot do what I say if he will just watch figures. There must be some questions in your mind that you are in doubt about.

*Question:* Do you say that you should charge everybody the same price?

Mr. Bosworth: Oh, no. Have a minimum price and then go as high as the skies. Don't charge any of them too little. Get the minimum fee and the rest will take care of itself.

*Question:* Are you selling your time or your services?

Mr. Bosworth: Time and services are the same. You cannot afford to sell time at a loss. You have to protect yourself and that is why we get the minimum fee which shows a profit.

Here is an operation of stopping a toothache. It will only take five minutes and you may get twenty dollars for it.

*Question:* Is ten cents a minute the charge for the treatment?

Mr. Bosworth: That is the minimum. Why does a dentist make five or six thousand dollars a year and no more? That is all in his head. He sets it mentally at that figure and it blows off when it reaches the figure he is thinking of. I can read you letters here that show results you wouldn't believe. Any man here can double his practice if he goes home and sets up for every minute he works, a minimum fee. That is all you need to do to double your practice. You must be paid so much a minute for that work on that side of the ledger. That is one of the biggest things in the business side of dentistry.

<sup>1</sup>We are publishing the article in this issue for the benefit of our readers.—EDITOR.



Here is another diagnostic chart.

This chart, gentlemen, sets up the foundation for starting your patient in the office. This gives you something to file away with the account. After you have the X-ray pictures and have made the examination, it gives you the whole story of what you found in that mouth. This is what you think you are going to do for them, the estimate plus the treatments. Against this amount here you set up all the time you have put in with that patient and if it exceeds that it is a bad guess, but if it is less, it is alright. If a dentist don't know whether he has made a profit or not he is in a bad shape. If you go to the market and buy something for thirty cents, you know you have to sell it for fifty cents to make a profit. If you would sell it for less you would come out the little end of the horn.

If you commence to watch figures it will be just like a game, just as interesting as a bridge game, something to kind of look at with interest. You have set up forty dollars a day which means a ten thousand dollar a year gross income—working six hours a day and two hundred and fifty days a year in this column here, and if you have more than that you will know your work has been accomplished. That is a hazard, something you are shooting at. It comes out here and you know you are all right. You don't have to wait until the end of the week, month, or year to know how you come out.

You have here the condition of the month when the patient came to you. That may be, in after years, a good thing to have. You have at least one point to go back to for your own protection. You have the full mouth of X-rays, a study model and that examination sheet. That is filed away with the ledger sheet.

Here is your ledger sheet, the service rendered, the chair and laboratory time per hour, the fees, the credits, debits and balance. You know that at the end of the month, if you send out your statements the way we advocate the collection sheet you would have this laying on your desk, which is the list of everybody that owes you money, on the first of the month.

Here is a *prophylaxis sheet*. As time goes on there is more and more of this periodic work every day. There are twelve of these sheets, one for each month. These are the patients that have agreed, after your telling them your side of it, to come in at stated intervals for prophylaxis treatment. When their time comes you mail them an appointment card. An appointment card is a definite appointment which goes on your appointment book and if they don't eliminate their name from that list they have to pay for the appointment. Your assistant takes care of this automatically.

We have a little card we use in the laboratory to get a man to try to follow every individual case. Every time you work on that case you stamp it in order to try to prove how much time you or your assistant

puts on that class of work. You are entitled to your fee for that class of work the same as chair work.

If you will just set yourselves up at so much an hour, the other will work out. When you balance your books you easily can get your cost determination, but you can't get it until you get a set of books for one year.

You can do better work when you are well paid. You can put more work into it when you have your heart in it. There are a lot of letters here giving evidence of their success under this plan. I don't think there is any reason I should read them. You may come down here and read them if you wish.

If you will take only 10 per cent. of this home with you, you will get 10 per cent. benefit and so on. You won't have so much hitting and missing or take on so many objectionable patients.

Tower Building, Michigan and Madison.

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## THE POSSIBILITIES OF THE DENTAL OFFICE ASSISTANT

BY HARRY J. BOSWORTH, CHICAGO, ILL.

**I**N MY TWENTY-FIVE YEARS of close association and daily contact with the dentist, I have had an ideal opportunity to observe what the possibilities are for the successful handling of a dental practice. One of these is to have the assistant or dental nurse do the things she can do, leaving the dentist free to do only the one thing in the office that produces financial returns, viz., the practice of dentistry, and in all my plans for better dental offices, the efficient assistant looms up pre-eminently as a factor.

In my opinion, a dentist can no more afford to be without an efficient assistant than a business man without a stenographer; i. e., a dental office without an assistant is like a business man writing his letters in longhand.

Along this line of thought, I am going to try to enumerate what the assistant can do to assist the dentist and thereby help to increase the efficiency of your present assistant.

If you have too much work for one assistant, employ two. They will prove to be the best investment you could make and will pay *dividends* much larger than you anticipate.

I believe that the assistant should dress in a white gown, or apron, so she will look distinctly different. There are a number of different styles of gowns that can be used for this purpose; those with long sleeves and high neck are preferable. Sometimes a cap is worn also. The impression made by dressing in uniform has a very pleasing effect and creates favorable publicity. The assistant is as much a part of the office as the operator, and any favorable impression that reflects credit to the office cannot help but pay big dividends.



The dentist should dress in a garment that covers all his street dress—collar, tie, etc. The long sleeves are preferable for same, and avoid possible criticism from patients.

The assistant should open the office in the morning; put the finishing touches to the work of the janitor; see that every piece of furniture is clean, highly polished, and in its proper place for the day's work. Make out a list of the day's appointments so that the proprietor can see at a glance (without referring to the appointment book, which is often indistinctly marked) just what the day's work is to be, so the same can be planned without lost effort. Any patients that come in without an appointment must be added to this list in red ink.

The moment patients arrive they should be met and either escorted to the operating room or assured that the doctor will see them shortly. Nothing annoys patients like waiting in the reception room, not knowing whether or not the dentist knows of their presence. See that the patient's wraps are cared for, and assist in rendering any personal service possible.

There is but one correct, comfortable position for a patient in a dental chair, and every assistant should learn it so that the chair can be put into that position before the patient is seated. There is no wisdom in a dentist buying a high-grade modern chair unless the comfort to patient and operator is obtained in every case. This is important, because when the patients are made comfortable they are in a more receptive mood for the selling talk.

When the patient is comfortably seated, apply the linen. Some operators use caps for patients, which is a good idea, as it creates the favorable comment so much desired.

Take from the case a clean, polished, drinking glass. Never use the water from the cuspidor, if possible to avoid it, as the close association of drinking water with the cuspidor leaves an unfavorable mental suggestion on some patients.

Always keep saliva ejector tubes in sterile solution in a glass jar and be sure to remove same from jar in sight of patient, for then there will be no question as to cleanliness.

Where two operating rooms are used, always try to have a patient ready in the second operating room so that the operator can go to work on said patient while you are dismissing previous patient and rendering any personal service possible.

By using the Duplex Operating Room and an "Up-to-the-minute" assistant, the dentist can save an hour's time each day, and if he will teach his assistant to do the things that can be done for him, he can save another hour's time each day. At the average man's fees, this saving alone means a \$2,500 per year increase, with no advance in fees, but simply increased efficiency.

By carefully watching the daily efficiency card, an assistant can keep all the time filled by resorting to the "Call" list which every "Up-to-now" office should have.

The telephone constitutes one of the greatest wastes of time for the dentist, and 75 per cent. of this wasted time can be avoided by the assistant informing those calling that the doctor is busy with an operation and then asking them if they cannot give her the message. If it is quite important that they talk with the doctor, he will call back just as soon as he is at leisure. The assistant should keep a list of all such calls and refer same to the operator when he is at leisure.

These methods usually bring the desired results. It is not fair to either the patient in the chair or to the operator to have to run to the telephone during an operation. After the patients are educated to this plan, they will not try to reach the individual each time; and the impression that the man is busy is favorable.

The assistant, at the chair, should be the third hand of the operator. She can mix all plastic fillings, and be taught to operate the gas apparatus, X-ray machine, sterilizer, etc.

The development of radiographs is quite as important as taking the pictures, for often a well-exposed picture is spoiled in the developing. Your assistant can learn this technic by getting in touch with the nearest "Eastman" agency or any film concern.

The dentist should under no circumstances handle money or make change from his pocket before the patient, as such custom detracts from the prestige of the office, making it look like a small "one-man" proposition. The best system is to have the assistant handle all moneys, putting the total receipts of each day in the bank, arranging the petty cash fund for making change and paying all petty bills. All regular bills should be paid by check. In this manner each day's receipts are positively accounted for.

The assistant should keep all records, make out all statements at regular intervals, write all checks and all letters, and receive and dismiss all who come to the office, letting only those who are entitled to consideration reach the doctor; thus conserving every minute possible of the operator's time for work, recreation or rest.

There is no excuse for the operator ever being seen in the reception room. The arrangement should be so that the operating room cannot be seen from the reception room. A good plan is to have a business office between the reception room and operating room.

In many offices the assistant helps in the laboratory, doing such work as investing, casting, soldering, polishing, operating the porcelain furnace, etc.

When you can get the proper co-operation from your assistant, your ideas of dentistry will have changed. If an assistant will apply herself to even a part of the possibilities, some of which I have named, there



will be no time for knitting or reading in the reception room—in fact, an assistant should never go into the reception room except to meet a patient.

Every night, when the day's work is over, it's a "safety-first" plan to turn off at the floor plate the supply of water for the cuspidor, and turn off current to electrical equipment to insure against damage arising from allowing the engine, lathe, etc., to run all night, as well as against electrical storms.

It is a good plan to slip the sleeve off the hand-piece and oil it or leave it in oil over night, and also to put the head of the angle hand-piece when not in use, in oil, as more hand-pieces are ruined by neglect than by wear.

Efficiency—"Cutting the corners" is the keynote of the increased income, and don't be "penny wise" and "pound foolish" by trying to get along without at least one assistant, and don't be afraid to pay her what she is worth. A good assistant is priceless; but one who cannot measure up to these duties is expensive at any price. By being patient and teaching one thing at a time, I feel certain that anyone can have a real assistant at the end of three months' time.

The demand for dentists' assistants is large and any girl can afford to apply herself in order to learn. When she has thoroughly learned her duties, it will be more pleasant and pay better than most any other line of endeavor.

Before closing the day's work, spend a few moments with the dentist in going over the daily efficiency card, getting the proper charges on the book. Many charges are forgotten when this is neglected.

A better plan is to charge for that part of the work done, whether the contract is complete or not, basing each charge made on the time taken to do each operation. In this way you know definitely what your earnings are each day, and eliminate all guess work. This also proves whether your estimates are profitable or not.

Send out statements promptly on the first of each month for work done, whether entire job is completed or not. Always typewrite such statements and never send itemized bills unless requested, a good plan being to note on the statement form that items which go to make up the bill can be seen by calling at your office.

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### Ohio State Board

The Ohio State Dental Board will hold their fall examination for applicants for state license, on October 27th. The examination will be held in the Dental Department of the Ohio State University, Columbus, Ohio. Applications will not be received later than October 17th.

HOLSTON BARTILSON, *Secretary*,  
150 East Broad St., Columbus, O.

## DENTAL FOCI\*

BY PERCY R. HOWE, D.D.S., BOSTON, MASS.

SOME OF THE SLIDES which have just been shown on the screen illustrating: (a) certain varieties of micro-organisms found constantly present in dental caries, (b) certain phases of tooth diseases, (c) application of the silver reduction method of accomplishing root sterilization, and (d) the results obtained in the treatment of over four hundred cases, are from an article by the writer published in the October, 1918, number of the *National Dental Journal*. The formula for preparing the silver solution, which also appeared in the same paper, is herein reproduced as a matter of reference.

Solution "A": three grams of silver nitrate crystals, dissolve in 1 c. c. of water; when dissolved, cool a little and add 2.5 c. c. of 28% ammonia. This will give a murky solution; it should have no odor of ammonia. Allow it to settle; the clear top solution should be used. Keep in a dark glass bottle.

Solution "B" consists of a 25 per cent solution of formalin. These solutions should be kept in separate bottles.

If some of solution "A" is poured into a test-tube or small glass vial and solution "B" is added, a heavy precipitate of metallic silver occurs, making a mirror upon the sides of the receptacle. The chemical reaction that occurs is one of reduction. Many substances will reduce the silver from this solution, but we believe formalin to be the best for our purpose.

This method of producing sterilization of tooth cavities has been used quite extensively both in this country and abroad. In the majority of cases exceptionally good results have been reported; in others, due to faulty methods of application, the outcome has not been quite so satisfactory. There should be no pain following the application of this solution.

Before applying this material the cavity is cleansed with a bur, all the debris removed, the cavity swabbed with alcohol, and the solution then applied. "The method will affect sterilization; it will do more; it will impregnate all affected dental structure with finely-divided, metallic silver; it will not enter sound dentin. It is intended as a preventive measure; it will absolutely kill the carious process and it protects against a secondary attack. I believe it should be applied to children's teeth as a routine measure; it will enter any defect in structure, destroy the bacterial flora, and block the tubuli with finely-divided silver; it will not

\*Address delivered before the Kentucky State Dental Association, at Louisville, Kentucky, June 9th, 1919.



enter nor stain sound structure. It will fill the disorganized dentin in an infinitely more perfect manner than is otherwise possible. Fill the bulk of the cavity with anything you desire. You have avoided to the fullest possible extent encroachment toward the pulp. What I want to especially emphasize at this point is the value of this method as a preventive measure."

The application of this method will make everything absolutely sterile; it will destroy any type of micro-organism which may be present; it will imperviously seal the most minute cavities. The solution being selective in its action will follow dead tissue wherever it may be, but when it comes in contact with healthy tissue its action ceases because of resulting coagulation. This material is intended for use only in the teeth, it should not be applied outside the teeth in the cellular tissue. It must be remembered that any material, as a rule, which will kill micro-organisms also will destroy living tissue. In the cellular tissue I use physiological salt solution, Dakin's fluid, etc., to remove dead material. I have records of more than four hundred cases in which the silver solution has been used, in only four or five of which was the result unsatisfactory, and in these there was some other good reason for the failure.

In this connection, I would like to say a few words in regard to focal infection with especial reference to the teeth. We have had the theory of focal infection, based upon the streptococcus viridans, handed down to us as explaining the cause of a great variety of systemic diseases; in fact, everything from diabetes to cardiac disease; from arthritis to gastric ulcer, and the good Lord knows what not, have been supposed to originate in the teeth on the basis of streptococcus viridans infection. The pertinent fact appears to have been overlooked that during life, under ordinary circumstances, the streptococcus viridans is a normal inhabitant of the buccal cavity. It is found in normal mouths from infancy to old age. It may be temporarily absent or suppressed, however, during the course of certain systemic diseases. In pneumonia, for example, the mouth may be clear of streptococcus viridans for some time, being overgrown, so to speak, by the type of pneumococcus associated with the disease, the latter appearing in the mouth and persisting for about ten days, then, after the pneumonia has subsided, the streptococcus viridans reappears in the mouth. I have heard it said on many occasions that the teeth were responsible for pneumonia, regardless of the type of pneumococcus associated therewith, but I am inclined to dispute this; at any rate, the pneumococcus found in the mouth is "type iv" the one least often associated with the disease of all the pneumococci. The streptococcus viridans, which belongs to the non-hemolytic variety of micro-organisms, never has been thought to be the cause of the disease.

Bacteriology, as a science, is now undergoing reconstruction and re-classification. The Society of American Bacteriologists are reviewing facts and theories and endeavoring to place them on a uniform basis. They are trying to "fish out" as it were the micro-organisms and re-classify them properly. So far as the streptococci are concerned, the best work on classification has been done by the Rockefeller Institute, and many of the types have been re-classified. The chief interest centers about two types, viz., (a) the hemolytic, and (b) the non-hemolytic. Even this classification is not a hard and fast one. It is, however, much used. As is well known the hemolytic type is the one which destroys the red blood cells, whereas the non-hemolytic does not. The viridans belongs to the latter type, and, as already stated, is a normal inhabitant of the mouth. The hemolytic type is found in the blood stream of individuals having diseases in which streptococci are the most predominant factors; this has been especially noted in pneumonia following epidemic influenza. Kinsella says that even in sub-acute bacterial endocarditis, where this type of micro-organism (non-hemolytic streptococcus) is found constantly in the blood stream, if it appears upon a previously-injured heart valve it seems to be merely saprophytic. In milk epidemics, etc., the streptococcus viridans is an organism of very low virulency, its virulency may be slightly increased, but it never in any case becomes a virulent micro-organism. For example, a minute colony of virulent or hemolytic streptococci injected into the blood stream of a rabbit will produce death within twenty-four hours; on the other hand, streptococcus viridans in almost any quantity may be injected into the animal without the production of appreciable effect although the organisms may be found in many tissues of the body. This is because the cells of the tissue are attempting to dispose of them. While other body tissues may not be sterile, the blood usually is. Non-hemolytic streptococci depend for their parasitic growth upon a previous preparation of a part—a focus of lowered resistance. Neither pyorrhea alveolaris nor a dental abscess can be produced by injecting streptococcus viridans into the healthy gum. I never have been able by injecting any group of organisms taken from pyorrhea pockets to produce anything simulating pyorrhea alveolaris.

Certainly no one who has made a special study of diabetes would for a moment attribute the cause of that disease to the teeth or any other focus of infection. Possibly acid bacilli arising from the teeth might find lodgment in the normal gastric mucosa and the resulting hyperacidity be a factor in the production of gastric ulcer; but the fact remains that gastric ulcer may be experimentally produced in such a variety of ways that even this proposition seems extremely doubtful. And the same statement will apply to every systemic disease which has been attributed to foci of infection located in the teeth.



I think in extracting teeth on the basis of streptococcus viridans being the cause of all kinds of systemic disease we should proceed very carefully. Of course the statement requires no emphasis that all abscesses and pus pockets found about the teeth or gums, and in which the staphylococcus usually is found, should be properly treated or the teeth removed. However, the exponents of the focal infection theory never mention the staphylococcus. In arthritic cases a non-hemolytic streptococcus often is found similar to the streptococcus viridans and has been considered the cause of arthritis. This represents the view of only one set of theorists. It is safe to say that the cause of arthritis is unknown. Undoubtedly some benefit accrues from the curing of abscesses about the teeth and mouth in arthritic cases, but I very much doubt that this can be explained upon the infectious basis. Improvement follows correcting nutritional disturbances which are nearly always present. Those who have studied most extensively the various presumed causes of so-called "rheumatism" pay but little attention to local foci of infection at the present time due to the non-hemolytic streptococci, but do take into serious account the staphylococci and hemolytic types of streptococci, never, however, leaving out the nutritional factor.

In the so-called infectious granulomata about the gums, cultures will show a number of different micro-organisms. You might select any one and say it is the cause of the disorder, but why try to fasten the responsibility upon the streptococcus viridans? Examination usually will show that such granulomata are merely small sacs undergoing fatty degeneration, nature having already undertaken the requisite reparative processes. I rarely should regard such granulated enlargements as infectious foci.

I do not wish to be understood as disregarding the teeth as factors in certain types of systemic disease. As a rule if a man has syphilis, he has a "syphilitic" mouth and teeth; if he has diabetes he has a "diabetic" mouth; if he has "rheumatism" or gout he has "rheumatic" teeth. In any event the mouth and teeth merely reflect the general systemic condition, they are not the cause of the disease; the teeth do not preside over the life history and pathology of the body; the teeth and mouth, as already stated, merely reflect the general systemic condition of the individual. In localized areas in which such infection as we are discussing appears, the infection is to be regarded as secondary.

It is very important under all circumstances that the teeth be preserved, and we are able to do this successfully in the majority of instances by methods which already have been described. Because of nutritional reasons it is particularly important that the teeth of growing children should receive adequate attention. If it were true, however, that the teeth were causative factors in the production of systemic

disease, there would be few healthy individuals in the world. For example, among fifty thousand cases observed in the Forsythe Dental Infirmary with all varieties of lesions involving the teeth there was not a single case of endocarditis, "rheumatism," arthritis, or other systemic affection which could in any way be attributed to the teeth that I could discover. If the theory of focal infection were sound and correct a great many of these children should have exhibited such diseases, but the fact remains they did not.

In this connection, it is well to remember that very little is yet known about many of the common diseases which afflict humankind. Even at the present day what is known about the cause of cancer, of "rheumatism," of diabetes, of pernicious anemia, of epidemic influenza? Almost nothing! There is a great deal yet to be learned before we allow the teeth to become the scapegoat for all the ills to which human flesh is heir.

I recall a young lady who had endocarditis which both her physician and her dentist attributed to her teeth. I had known the mother of the young lady for a number of years and she asked me if I thought her teeth were the cause of her endocarditis. I told her frankly that I did not believe the teeth were ever the cause of endocarditis or any other cardiac affection, and further explained to her that while this was a "pet theory" of many so-called authorities it remained to be proved. Notwithstanding my advice she returned to her physician and dentist and after repeated x-ray examinations they claimed to have found something wrong with the teeth; at any rate, four of her molars were extracted and it was declared that she had been thereby cured of her endocarditis. Within a few weeks she became much worse than ever and was taken to the hospital where fortunately there were a few doctors who possessed average common sense, and it was soon discovered that the patient had an ovarian tumor the size of a cocoanut. After celiotomy and removal of the tumor her endocarditis disappeared. This is only one of a great many equally ridiculous instances which I might relate did time permit.

In conclusion I wish to emphasize the importance of preserving the teeth under all circumstances where possible as a factor in health, and keeping the mouth in a healthy condition; but I do not believe systemic diseases upon the focal theory of infection are correctly attributable to the teeth.

10 Exeter St.



# SUGGESTIONS

CONDUCTED BY F. R. CHAPMAN, M.S., D.D.S., COLUMBUS, OHIO

(To Our Readers: Give others the benefit of your practical suggestions by sending a description of them to Dr. F. R. Chapman, Schultz Building, Columbus, Ohio.)

## Cleaning Instruments

Partly corroded and rusted instruments can easily be restored to good condition by immersing them all night in a saturated solution of chlorid of tin, after which they should be rinsed and rubbed with chamois.

—*Dental Outlook.*

## Nerve Broach

To prolong the usefulness of a nerve broach after it has become unfit for extracting nerves, rub the barbs down with the edge of a file and make it into a roughened or smooth broach.

—*Arthur A. Wilson, Commonwealth Dental Review.*

## Matrix for Porcelain Inlays

There are two methods of forming the matrix for a porcelain inlay, the direct and the indirect. Of the two methods, advantages are claimed for both, and I would say that when a careful technic is followed out, you can obtain results with the use of either. However, I am partial to the direct methods for the following reasons: That the operations can be made at one sitting; the advantage to study the color and tooth form; also I claim that you can get more accurate adaptation of the porcelain at the cavo-surface angles, which enables the operator to turn out an inlay with less overhang at that point.

In approximal surfaces, the matrix is cut one millimeter larger than the outline of the cavity at all points. The piece of platinum is set to place with a pair of foil pliers, and a burnisher is first used to carry it over the cavo-surface angles. Then a piece of spunk, that will fill the cavity, is moistened and pressed against the platinum, forcing it into the cavity with a ball burnisher. A flattened orange-wood stick is then used, and with the aid of the mallet, this spunk is forced into the cavity, which carries the matrix against the walls and down into the angles. The spunk is removed; then a strip of medium rubber dam is passed around the tooth over the platinum, and it is held tightly while the burnishing is completed, first by using a larger ball burnisher; then a smaller-sized one is used, working it well down into the cavity, and with a rounded point No. 6 explorer the final burnish is made down into the angles, which gives a clean angular outline to the matrix, reproducing the gingivo-axial, linguo-axial, labio-axial, and inciso-axial angles. The matrix

is then removed and trimmed, leaving about one-half millimeter overlap at all points except at the linguo-cavo surface angle. At that place it should be trimmed so that it barely covers the angle. This enables the operator to remove the matrix from the labial surface with much greater ease. It is then replaced in the cavity, the rubber band passed around it, and held firmly while it is given a very careful reburnishing at all points. Care should then be taken in its removal from the cavity, so as not to change its form in the least, and if the proper care is used in baking the porcelain no change whatever will take place in the matrix.

—J. E. Argue, *Journal, N. D. A.*

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### **Covering a Platinoid Bar with Solder**

After the lingual has been contoured and filed to form it is heated to a dull red and plugged into powdered borax. Then heat with the blow-pipe until the borax has melted and glazed the entire bar. Now apply the solder in long strips and flow in the usual manner. The results will be an even, smooth coat of solder over the entire bar. Any base metal may be treated in the same manner.—P. C. Tennis, *Pacific Dental Gazette*.

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### **Do Not Over-Polish Occlusal Surfaces**

Close examination of the unworn occlusal surfaces reveals a surface not highly burnished or polished. It is designed to hold the food as it grinds and cuts it. If this surface is over polished it does not functionate. All other surfaces should be highly polished. The occlusal surfaces should be smooth and sanitary, and true to form, but never highly polished. The best occlusal surfaces are secured by small fine grit stones.

—J. M. Prime, *Journal N. D. A.*

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### **Softening the Automatic Mallet Blow**

Most of the automatic mallets strike a live and somewhat of a re-coiling blow with the steel striking steel. If the instrument is opened and a washer of rawhide made and fitted to the anvil upon which the weight strikes, and then assembled again, we will have a mallet that delivers a cushioned blow without the objectionable noise.

—F. W. F., *Pacific Dental Gazette*.

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### **Veneering Vulcanite Dentures**

It is a well recognized fact that the tissues tolerate black vulcanite better than any other color. This desirable result may be had in the following manner without the danger of having a porous case, or the exhibition of the black case when the patient opens the mouth. Pack the case in the usual manner, but not quite as full as required, test the case, open the flask and stretch a sheet of the black vulcanite quite thin and place it over the other vulcanite in the usual manner.

—F. W. F., *Pacific Dental Gazette*.



### A Cause of Pericemental Pain

The pericemental pain that follows the extirpation of pulps by pressure anesthesia is generally due to a secondary hemorrhage. This pain may be avoided by placing a dry paper point in the canal. Should a secondary hemorrhage occur, this paper point would absorb the blood which would otherwise accumulate around the apex, and produce a pericementitis. The trouble lies in the fact that many dentists are still in the habit of placing cotton saturated with various drugs into these canals, thus preventing (in the event of a secondary hemorrhage) the blood from following a line of least resistance.

—*Wm. Stillpass, Dental Outlook.*

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### Capillary Attraction in Root Canals

It is not wise to depend on capillary attraction to fill the root canal of a tooth with chloro-percha, but such limpid fluids as water, blood, serum, Howe's solutions, the essential oils will readily pass up the canal if the pulp chamber is flooded with the fluid in such a manner as not to confine air in the canal. To fill any small depression or cavity with a fluid or semi-solid, the solution or fluid should be placed where it is not wanted and pushed to where it is wanted, as in pouring a model or investing an inlay. So in filling a canal place the fluid on the walls of the pulp chamber first, and then allow it to flow up the walls of the canal. A whole globule of chloro-percha dropped into a pulp chamber confines air in the canal and requires a good deal of manipulation to release it.

—*Dominion Dental Journal.*

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### Correcting Soldered Work and Inlays

Often we have a flaw or pit in our soldered work, as for instance, an imperfect joint at cervix of Richmond crown. Make an amalgam of a few pellets of your filling gold and mercury. The mat golds are splendid. Use a clean mortar and pestle not contaminated with our regular amalgam alloys. Or it is just as efficient to make the mix in palm of hand. I always clean the palm and thumb and forefinger of the other hand with alcohol before working any amalgam. Have the piece to be repaired clean. Squeeze out surplus mercury in clean chamois. Pat down and smooth over with a burnisher or finger this amalgam where you wish to restore a part. Place work on a piece of mica or sheet of metal and heat slowly. In a few minutes all mercury is carried off leaving a yellow-gold surface. Cool, dress down and polish. This method is especially handy with inlays. For any discrepancy, add a little of the gold amalgam to inlay and insert back into cavity with pressure; trim and remove carefully. Heat as before stated and a misfit becomes a "howling success." Use the amalgam quite dry and there will be very little shrinkage. Do not stand over work while heating. Have been using this method for years and there is no danger from mercury poisoning.

—*F. L. Dungan, Dental Digest.*

### Use of Dakin's Solution in Dentistry

By comparing the results reported from the use of Dakin's solution with our own observations, it can be seen that much more experimental work is necessary before the value of Dakin's antiseptics in dentistry can be determined. Control cases are important. In one of our pyorrhea cases treated with physiological salt solution, results similar to those treated with Dakin's solution were obtained. When Dakin's solution is used as a mouthwash it probably has about the same effect as a salt solution, for the saliva dilutes the solution to such an extent that it no longer contains the percentage of sodium hypochlorite necessary in Dakin's solution. In a test tube experiment, 10 cc. of a 0.5 per cent. Dakin's solution was mixed with 1cc. of saliva and titrated immediately. The resulting mixture gave 0.43 per cent. sodium hypochlorite.

Before we can accept any results from the use of these antiseptics we must have the bacteriological control as well as the clinical observations. Dentists must differentiate between an antiseptic and a deodorant. Many think that if after treatment with a solution the offensive odor is removed or disguised, everything is well. This is an erroneous conclusion, for the odor may be reduced but the infection continue. Enthusiastic statements such as Kauffer makes, cannot be accepted without further experimental proof. He failed to give the number of cases found sterile after his treatment, and the number he judged successful "by the character of the organism." Not much weight can be attached to conclusions like those of Marshall, which, without even the backing of a bacteriological control, anticipate a complete cure in two weeks' time.

Although we have not used Dakin's solution or 1 per cent. chlorazene to disinfect the mucous membrane before injecting novocain, my bacteriological tests with these solutions show that sterility of the mucous membrane can be obtained by swabbing with these solutions, as is the case with tincture of iodine.

Tests with Dakin's solution, chlorazene, and dichloramin-T show that they do not penetrate tooth structure. Only surface sterilization may result when these antiseptics are sealed in root canals. Dakin's solution when used as a mouthwash has no injurious effect on tooth structure or on fillings. Amalgam fillings are attacked only after several hours' exposure in the solution.—*R. F. Horel, Dental Cosmos.*

### A Clever Restoration

As a practical hint I send the enclosed information: Patient has a peg tooth lateral and for good reasons she did not want a porcelain jacket crown. I made her an open-faced crown and cemented it on and let it firmly set. Burred out the cement on the labial surface and restored with synthetic porcelain. This made a very neat restoration, and there was no preparation of the tooth to be made.—*Guy Brown, Dental Digest.*



A decorative border featuring a repeating pattern of stylized flowers and leaves, framing the central title.

# EDITORIAL

## VALUABLE READING

WE ARE DEVOTING nearly the whole of this number of THE DENTAL SUMMARY to the proceedings of the recent post-graduate meeting of the Kansas State Dental Society. We mention this, not in way of apology, for no apology is needed, but for the purpose of impressing our readers with the importance of carefully reading and studying these lectures.

Dr. Black's subject is one of the most vital before the dental profession and the suggestions he offers will make every dentist a better dentist if he apply them in practice. They will make every dentist a more careful, more thorough dentist and put into practice will be of inestimable benefit to patients.

The day of empiricism has passed; the successful practitioner of today must find the cause of disease and remove the cause.

Dr. Black in these lectures has shown the way to a better diagnosis and treatment of these destructive periodontal diseases. And he points out the necessity for preventive dentistry and gives many helpful suggestions along these lines. We hope that every reader will not only read these lectures but study them to get the full benefit of Dr. Black's teaching.

Another of the lectures by Mr. H. J. Bosworth, on the subject, "How to Double Your Income" is filled with business suggestions no dentist can afford to ignore. While he does not advocate sensational fees, he does believe in good, consistent fees that in all cases show a profit.

He calls attention to the non-productive work that dentists are doing for which they get little or no pay, and points out why they should charge adequately for this service the same as any other rendered.

He calls attention to a more complete system of record keeping and gives some splendid suggestions on conducting the daily practice.

Mr. Bosworth tells, also, about the "Possibilities of the Dental Office Assistant."

Dr. F. Ewing Roach, who has given so much time and study to the "Importance and Scope of Partial Denture Prosthesis," gave two lectures the first of which we publish in this issue. The second, appropriately illustrated will appear in a future number of THE SUMMARY.

During the greater part of the present year Dr. Roach has given up his practice to lecture and demonstrate to dentists in almost every state

in the Union and it is a privilege to publish the lectures for the benefit of our readers.

Those who are not already familiar with these methods should make a study of them and if interested in this advanced work should seek an opportunity to go deeper into the subject and technic by attending one of his post-graduate courses.

A dentist now-a-days cannot stand still; he must either advance or lose, and THE SUMMARY is doing all it can to help him advance.

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### The Use of the Drill as an Aid to Tooth Extraction

I wish to make known to every member of the profession my experience in using drills before extracting teeth. It converts the present method of extraction (which is a combination of skill and brute force) into a simple scientific surgical operation. I have proved its success over and over again, and feel sure that every dentist will be thankful to know that he need never again struggle with an obstinate tooth.

Before extracting any tooth that I suspect may give the slightest trouble I drill away the labial or buccal plate of the alveolus, and then with a pair of forceps the tooth is easily removed through the opening thus made—without any chance of breaking it. My *modus operandi* is as follows: With a strong lancet I clear the gum from the tooth and alveolus, then take a large-size pointed cross-cut fissure bur from which the temper has been drawn (heating it to a dull red heat draws the temper and sterilizes it), and drill away the bone, keeping the bur close to the roots of the tooth. In the case of molars I make sure that the alveolus between the roots is carefully severed; about five-eighths of an inch is the usual depth to drill. It does not take half a minute to do this, though the temper of the drill has been drawn. (If the drill is hard it is liable to break.) When I need to use an elevator, I drill a hole in the alveolus in exactly the position I want to place my elevator.

The most fragile or strongest tooth can now be extracted quite easily, as it makes no difference if the roots be curved or exostosed. This drilling is not necessary in any simple case, but I am sure every dentist will be delighted with the result of the drilling in every other case. There is far less bleeding than one would expect to find, and the removal of the alveolus is really an advantage, because it later has to be absorbed or exfoliated.

I feel I am doing a humanitarian act in giving this method the widest publicity.—*Isidore Clifford, Cosmos.*



# SOCIETY ANNOUNCEMENTS

## Association of Military Dental Surgeons of the United States

The annual meeting of the Association of Military Dental Surgeons of the United States will be held at New Orleans, La., October 20th-24th.

R. W. WADDELL, *Secretary-Treasurer*

347 Fifth Avenue, New York.

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## International Prosthetists

The First Annual Meeting of The International Society of Prosthetists will be held in New Orleans, October 17th and 18th.

The officers of this new Society which was tentatively organized during the last meeting of the National Dental Association in Chicago are as follows: W. A. Giffen, Detroit, president; Russel W. Tench, New York City, treasurer; Dayton D. Campbell, Kansas City, secretary.

DAYTON D. CAMPBELL, *Secretary*

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## Meeting of School Clinicians

A special conference of dentists operating in school dental dispensaries and of persons interested in such is to be held in New Orleans at the time of the National Dental Association meeting, October 20-24.

At a similar meeting held June 13th at Syracuse during the New York State Dental Society meeting, so much interest was shown that a committee was named and instructed to call this National conference.

All persons interested are requested to extend their suggestions or questions to the committee.

DR. WILLIAM H. LEAK, *Chairman.*

Oral Hygiene Inspector,

New York State Department of Education.

DR. S. R. MEAKER, Auburn, N. Y.

DR. ERWIN SCHEID, Dental Director,

Chazy Central Rural School, Chazy, N. Y.

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## Ohio State Dental Society Meeting

According to intimations from the program committee of the Ohio State Dental Society the next annual meeting in December at Columbus promises to be one of the best.

It will be a Victory meeting in which those of the membership will be especially honored who took part in the great war. At the special session for this demonstration the guest of honor will be Col. W. H. G. Logan, who led the dental forces of the United States and presided over their destinies.

This will be a great opportunity for the dentists of Ohio to honor their own men and to give an appreciation of the efforts of Col. Logan who is one of the most distinguished dentists in the United States.

Another special guest will be Dr. J. V. Conzett, of Dubuque, Iowa, president elect of the National Dental Association. According to the usual form we feel certain Dr. Conzett will be the real president of the National when he gives one of his popular lectures at our meeting. Dr. Paul Stillman, of New York City, noted for his pathological and physiological work, will be another guest of the society. His subject will interest every dentist.

The second day of the meeting will be OHIO day. This means it will be an all-Ohio program of clinics and lectures.

There will be a real *old-fashioned clinic* all forenoon. Many clinicians will be there with ideas that will set one a whirling, and send all home feeling well repaid for their attendance.

The second feature will occupy all afternoon and consist of a dozen illustrated platform clinics by selected clinicians noted for their ability. All will be able to see. The evening program will be a banquet for our soldier members and the real story of dentists in the army will be given by Col. Logan and others.

Major S. D. Ruggles who was Treasurer of the Ohio State Society for many years became a "Major" in France and did great work over there. He is on the program for an illustrated lecture, which alone is worth going far to hear. Dr. Ruggles is a forceful and entertaining speaker.

This gives an idea of some of the program which will be sufficient for every member to make up his mind that he will attend the meeting.

Mark off dates Dec. 2, 3, and 4 for a trip to Columbus. *Do it now!*

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### Pennsylvania State Board

The Pennsylvania Board of Dental Examiners will hold examinations in Pittsburgh and Philadelphia on Wednesday, Thursday, Friday and Saturday, December 10th, 11th, 12th and 13th, 1919. The theoretical examinations will be held at the Musical Fund Hall in Philadelphia and at the University of Pittsburgh, in Pittsburgh. The examinations in practical work will be held on Wednesday, December 10, at 8:30 o'clock, at the Philadelphia Dental College and the University of Pittsburgh. Application papers may be secured from the Department of Public Instruction, Harrisburg. For further information address the Secretary, Alexander H. Reynolds, 4630 Chester Avenue, Philadelphia.

Yours very truly,

ALEXANDER H. REYNOLDS,

*Secretary to the Board.*



# OHIO STATE SOCIETY

Make arrangements early to be at the annual meeting of the Ohio State Dental Society, Columbus, Ohio, December 2, 3 and 4. Victory Meeting, Ohio Day "and everything." Watch for all announcements.

W. H. HAYDEN, *President.*

F. R. CHAPMAN, *Secretary.*

## Committees for 1919

### Ad Interim Committee: Board of Directors

W. H. HAYDEN C. W. MILLS F. R. CHAPMAN  
A. O. ROSS E. H. SHANNON  
C. H. SCHOTT CHAS SWOPE

### Publication

F. R. CHAPMAN, *Chairman*  
L. P. BETHEL, *Editor* JOHN MOLYNEAUX  
F. R. MANN PAUL CASSIDY

### Program

W. H. WHITSLAR, *Chairman*  
C. H. CLARK J. H. WIBLE

### Clinic

J. HERBERT HOOD, *Chairman*  
C. H. SCHOTT L. E. PHELPS  
J. H. CHESSROWN D. P. SNYDER

### Board of Censors

W. S. LOCKE, *Chairman*  
J. J. WELKER T. H. WHITESIDE

### Infraction of Code of Ethics

J. F. STEPHAN, *Chairman*  
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HARRY COPE, *Chairman*  
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### Supervision of Components

G. C. NIXON, *Chairman*  
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### Membership

G. H. WILLIAMSON, *Chairman*, and the chairman of the membership committee of each Component

### Military Affairs

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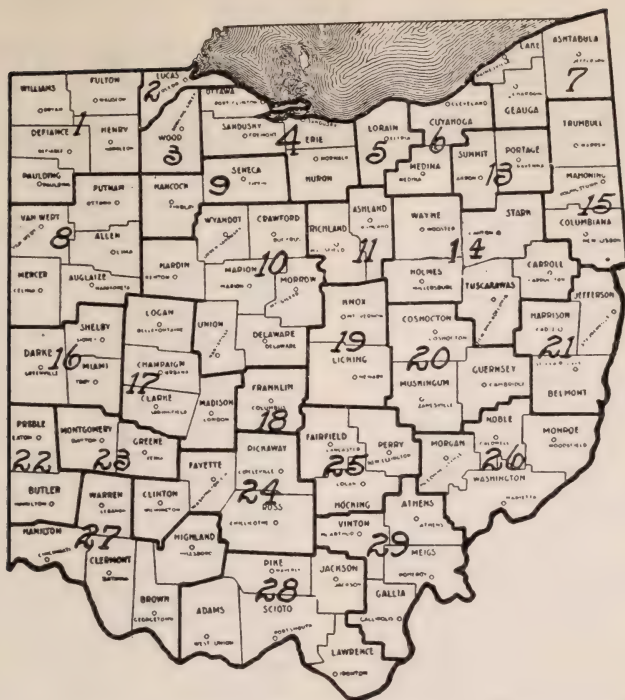
### Library

H. M. SEMANS, *Chairman*  
E. C. MILLS C. S. STARKWEATHER  
J. H. STUKEY H. R. C. WILSON

## The Component Societies of the Ohio State Dental Society

(This list of Officers is compiled from information furnished by the Secretaries of the various Components, where incorrect it is due to lack of information relative to elections. Secretaries are requested to keep the list correct by notifying the secretary of the State Society or the Editor of THE DENTAL SUMMARY of the result of elections.)

- 1 MAUMEE VALLEY DENTAL SOCIETY, meets 2d Tuesday, June and Oct.—Pres., A. B. Thompson, Metamora; V. Pres., N. A. Cunningham; Rec. Sec., O. S. Applegate; Cor. Sec., H. M. Jordan, Hicksville; Treas., J. A. Benner.
- 2 TOLEDO DENTAL SOCIETY, meets 3d Friday. Pres., W. J. Dierks, 1018 Spitzer Bldg., Toledo; V. Pres., R. K. Wood; Sec., L. C. Jackson, 2205 Ashland Ave., Toledo; Treas., C. H. Cox
- 3 WOOD COUNTY DENTAL SOCIETY, meets 2d Wednesday.—Pres., F. W. Wemmer, North Baltimore; V. Pres., B. D. Roe; Sec., R. E. Milbourn, North Baltimore; Treas., T. M. Lea.
- 4 NORTH CENTRAL OHIO DENTAL SOCIETY, meets 3d Wednesday, Jan. Apr., July and Oct.—Pres., R. E. Woleslagel, Bellevue; V. Pres., A. G. Thatcher, Fremont; Rec. Sec., L. H. McDonald, Norwalk; Cor. Sec., S. H. Rogers, Sandusky; Treas., E. S. Braithwaite, Willard.
- 5 LORAIN COUNTY DENTAL SOCIETY, meets 1st Tuesday, Feb., Apr., Sep. and Nov.—Pres., W. G. Schaeffer, Amherst; V. Pres., J. A. Minnich; Rec. Sec., P. E. Maddock; Cor. Sec., J. E. Betteredge, Elyria; Treas., J. E. Trombley.
- 6 CLEVELAND DENTAL SOCIETY, meets 1st Monday. Pres., W. C. Stillson; V. Pres., Ira Saum; Rec. Sec., S. F. M. Hirsch, 5415 Euclid Ave., Cleveland; Treas., E. D. Phillips; Cor. Sec., Frank Acker, 14516 Detroit Ave.
- 7 NORTHEASTERN OHIO DENTAL SOCIETY, meets 2d Monday—Pres., N. H. Bishop, Andover; V. Pres., H. O. Frederick; Sec., O. T. Battles, Jefferson; Treas., O. T. Battles.
- 8 NORTHWESTERN DENTAL SOCIETY, meets 4th Wednesday.—Pres., A. N. Bruzilius, Lima; V. Pres., E. A. Bobo and G. L. Brunk; Sec., J. W. Dimond, Lima; Treas., J. K. Bannister.



9 HANCOCK - SENECA COUNTIES DENTAL SOCIETY, meets 2d Wednesday.—Pres., T. C. Schwartzbek, Findlay; V. Pres., A. O. Cole; Rec. Sec., E. V. Burns; Cor. Sec., A. E. Mann, Findlay; Treas., V. H. Michener.

10 CENTRAL OHIO DENTAL SOCIETY, meets 1st Wed., Feb., May and Oct.—Pres., C. B. Emery, Marion; V. Pres., O. M. Young and F. Burger; Rec. Sec., D. G. Welch; Cor. Sec., F. R. Mann, Marion; Treas., F. C. McGaughy.

11 RICHLAND-ASHLAND COUNTIES DENTAL SOCIETY, meets last Monday, Feb., June and Oct.—Pres., J. F. Winans, Shelby; V. Pres., B. W. Livingston; Rec. Sec., F. O. Eckstein; Cor. Sec., J. H. Bristor; Treas., F. H. Williams, Shelby.

12 STARK COUNTY DENTAL SOCIETY, meets 3d Wednesday.—Pres., J. C. McConkey, Canton; V. Pres., C. O. Carr; Rec. Sec., E. H. Alden; Cor. Sec. and Treas., B. Hugo Bowman, Canton.

13 SUMMIT COUNTY DENTAL SOCIETY, meets 1st Friday, Pres., W. C. Cooper; V. Pres., Jas. Connors; Rec. Sec., H. G. Haas; Cor. Sec., G. H. Dumm, Kent; Treas., C. S. Hoover.

15 CORYDON PALMER DENTAL SOCIETY, meets 2d Thursday, April and Oct.—Pres., G. H. Ormeroid, Warren; V. Pres., J. F. Steele and T. J. Evans; Rec. Sec., R. R. Bode; Cor. Sec., J. H. Chessrown, Wick Bldg., Youngstown; Treas., J. K. Nash.

16 WESTERN OHIO DENTAL SOCIETY, meets 1st Thursday, Feb., May and Oct.—Pres., A. A. Davis, Troy; V. Pres., P. G. Eddy, J. J. Little and V. E. Bedford; Sec'y-Treas., F. A. McCullough, Troy.

17 MAD RIVER VALLEY DENTAL SOCIETY, meets 2d Monday, bi-monthly.—Pres., C. M. Evans, Springfield; V. Pres., ; Rec. Sec., C. A. Dawson; Cor. Sec., S. D. Hockman, Springfield; Treas., H. G. Butcher.

18 COLUMBUS DENTAL SOCIETY, meets last Tuesday, Pres. Oscar Miesse; V. Pres., D. P. Snyder; Sec., F. L. Gruber, 131 E. State St., Columbus; Treas., A. O. Ross.

19 W. D. MILLER DENTAL SOCIETY, meets 2d Thursday, May and Oct.—Pres., E. V. Prior, Newark; V. Pres., W. S. Deeley; Rec. Sec., J. D. Ford; Cor. Sec., L. E. Davis, Granville; Treas., W. B. Grossman.

20 MUSKINGUM - COSHOCTON - GUERNSEY COUNTIES DENTAL SOCIETY, meets 2d Thursday, Jan., May and Sept.—Pres., W. H. Dillon, Zanesville; V. Pres., P. F. Walker and A. W. Boyd; Rec. Sec., J. A. Honabarger; Cor. Sec., B. M. Beatty, Zanesville; Treas., H. J. Boyd.

21 EASTERN OHIO DENTAL SOCIETY, meets 1st Thursday, May and October.—Pres., C. S. Starkweather, Bellaire; First V. Pres., L. B. Peterson, Steubenville; Second V. Pres., George Sharp, Flushing; Cor. Sec., J. K. Hunter, Bridgeport; Rec. Sec., H. A. Smith, Steubenville; Treas., S. C. Hasbronck, Barnesville.

22 BUTLER COUNTY DENTAL SOCIETY, meets 3d Friday, each month.—Pres., P. A. Krucker, Hamilton; V. Pres., E. E. Meisterhaus; Sec.-Treas., F. T. Craven, Hamilton.

23 MIAMI VALLEY DENTAL SOCIETY, meets last Monday. Pres., H. C. Huffman; V. Pres., H. L. Oliver; Cor. Sec., H. M. Brewer; Rec. Sec., W. B. MacBain; Treas., J. R. Arthur; J. M. Chase; representative to the State Dental Society.

24 REHWINKEL DENTAL SOCIETY, meets 3d Thursday Pres., M. G. Phillips, Chillicothe; V. Pres., A. M. Bush and O. A. Thompson; Sec., F. D. Wollard, Washington C. H.; Treas., W. E. Robinson, Washington C. H.

25 HOCKING VALLEY DENTAL SOCIETY, meets 1st Monday.—Pres., J. J. Stuke; V. Pres'ts., C. F. Ackers and W. M. Scott; Sec., R. H. Wetzel, Lancaster; Treas., S. D. Vosper.

26 SOUTHEASTERN OHIO DENTAL SOCIETY, no report

27 CINCINNATI DENTAL SOCIETY, meets 3d Friday. Pres., R. W. Taylor; V. Pres., Wilson Foster; Rec. Sec., Paul Cassidy, 7th and Race Sts.; Cor. Sec., C. H. Stricker; Treasurer, J. D. Gordon.

28 SOUTHERN OHIO DENTAL SOCIETY, meets, 3d Monday, May and Oct.—Pres., O. D. Donaldson, Portsmouth; V. Pres., F. C. Goodwin; Sec., E. C. Jackson, Portsmouth; Treas., E. O. Buchanan.

29 OHIO VALLEY DENTAL SOCIETY, meets 2d Wednesday, Apr and Oct.—Pres., M. D. Hartinger, Pomeroy; V. Pres., R. B. Church; Sec., C. S. Shumaker, Pomeroy; Treas., J. B. Hodge, Middleport.



# TENNESSEE STATE DENTAL SOCIETY

The Fifty-second Annual Meeting of the Tennessee State Dental Association was held at the Hermitage hotel, Nashville, Tenn., September 4, 5 and 6, 1919, attended by about half of the enrolled membership of 435, including nearly 25 new names added during the session. The close proximity of the date of the National meeting at New Orleans undoubtedly operated to prevent a larger attendance, as many members expect to visit the Crescent City, and did not feel able to spare the time and money necessary to attend both meetings. However, the assembly room was well filled with an interested and interesting group of dentists who listened to and took part in one of the most important programs it has been the good fortune of the writer to hear. So great was the interest that some of the exhibitors felt that they were not getting a "square deal," and special time was, accordingly, devoted to them. There never was a time, from start to finish, that it was necessary to "shoo" or coax the men into the lecture-room. The sessions started on time and each speaker was greeted with a large and attentive audience.

Dr. Stanley Rich made an ideal presiding officer, his desire to serve the Association animating his every decision. Indeed, the efficiency and devotion of the entire executive left nothing to be desired.

The local Committee, under the able chairmanship of Dr. James W. Winn, ably seconded by Drs. Oliver and Ferrell, had charge of the entertainment feature, the principal item being a moonlight ride up the Cumberland to the first lock, accompanied by a good orchestra and a fine lunch including a double mule-team load of watermelons.

THE SUMMARY, which is the official magazine of the Association, is indebted to many of the members for special courtesies to its representative, especially to Drs. Stanley Rich, R. Boyd Bogle, Dean of the Vanderbilt Dental College, Ben. H. Johnson, A. G. Buckner, George L. Powers, Secretary, and just about the entire membership.

The papers making up the program were well prepared and particularly timely, having for their general aim the progress and increased general efficiency of the profession, not alone in matters of technic, but

along lines of character-building, education and the sum total of betterment of the individual. Dr. Justin D. Towner, of Memphis, presented a splendid lecture, illustrated with black-board diagrams, on the subject of "Efficiency," dealing with man-building in a unique and effective manner.

The sum of \$100 was appropriated for the Callahan Memorial Fund.

An air of fraternity and good will made the entire week a most enjoyable occasion. Those who were absent never can know how much they missed.

All papers and discussions are to be published in THE DENTAL SUMMARY just as soon as reports can be prepared.

Officers elected: President, J. L. Austin, Chattanooga; first vice-president, James W. Winn, Nashville; second vice-president, George L. Powers, Paris; recording secretary, C. E. Byington, Chattanooga; corresponding secretary, Oren A. Oliver, Nashville; treasurer, B. H. Johnson, Nashville (re-elected).

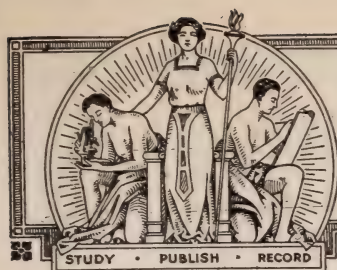
The term of Dr. H. M. A. Smith, member of the East Tennessee Board of Dental Examiners, having expired, the following names were recommended by the convention to the governor from which to fill the vacancy: Drs. P. D. Houston, Chattanooga; H. M. A. Smith, Knoxville; W. G. Cummings, Harriman; Charles Anderson, Knoxville, and E. Schwartz, Cleveland.

Dr. J. A. Gholson, of Clarksville, having finished his term as member of the Middle Tennessee Board of Examiners the following names were recommended to Governor Roberts from which to fill the vacancy: Drs. J. A. Gholson, Clarksville; G. M. Elliott, Springfield; C. W. Hoffer, Nashville; T. O. Bates, Shelbyville, and John R. Beach, Clarksville.

The officers elected for the ensuing year were installed by Dr. Stanley L. Rich, of Nashville, the retiring president.

Before adjournment, resolutions were adopted thanking the Hermitage Hotel and local committee and all who had contributed to the entertainment of the delegates, for the splendid accommodations and many courtesies extended to the members of the convention.

The next meeting will be held at Chattanooga.



# NATIONAL DENTAL ASSOCIATION ANNOUNCEMENTS

## Schedule of Trains and Rates to New Orleans

It is not the policy of the United States Railroad Administration to grant special rates for conventions, and as a consequence we will have no special rates for this meeting, but it has been practically decided that Winter Tourist rates will be placed on sale October 1st, 1919, bearing limit of May 31st, 1920, from the same territory and at the same rates that were effective last season (90 per cent of full fare). Complete information can soon be obtained from your consolidated ticket office or local agent.

Seeing the many advantages of bringing our members together at the most available points thus enabling them to travel together the greatest possible distance, it has been decided to use the Panama Limited of the Illinois Central, Chicago to New Orleans, on schedule as follows:

Leave	
Chicago (October 18).....	12:30 Noon
Kankakee.....	1:57 P.M.
Champaign.....	3:28 P.M.
Mattoon.....	4:23 P.M.
Effingham.....	4:58 P.M.
Centralia.....	6:11 P.M.
Carbondale.....	7:30 P.M.
Cairo.....	8:33 P.M.
Memphis.....	1:10 A.M.
Grenada.....	3:35 A.M.
Canton.....	5:58 A.M.
Jackson.....	6:45 A.M.
Hammond.....	9:45 A.M.

Arrive Sunday, Oct. 19th.  
New Orleans..... 11:15 A.M.

Members from Boston, New York, Philadelphia and intermediate points will find desirable train service on the several lines enabling them to make connection with the above at Chicago. The same is true for members from the extreme Northwestern and Northern California territory through Denver, St. Paul and Minneapolis. Members from Indianapolis, Louisville and contiguous territory can also avail themselves by connections at various points.

Buy tickets of your local agent and specify the National Dental Association train for your reservations.

### FARE FROM CHICAGO TO NEW ORLEANS

Fare from Chicago to New Orleans, including war tax.....	\$30.35
Lower berth, Chicago to New Orleans, including war tax.....	5.94
Upper berth, Chicago to New Orleans, including war tax.....	4.75

Drawing room, [Chicago to New Orleans, including war tax.....	21.60
Compartment, [Chicago to New Orleans, including war tax.....	16.74

### TRIP TO HAVANA—EXPENSES

Many inquiries have been received regarding the expense of a trip to Havana, and for the benefit of those interested your Committee has compiled the following data:

New Orleans to Havana, one-way, in- cluding berth, meals and war tax....	\$41.00
New Orleans to Havana, round-trip, (Special rate) including berth, meals and war tax.....	73.40
New Orleans to Havana, thence to New York, including berth, meals and war tax.....	84.20
Or returning via Key West—Havana to Key West.....	16.00
Key West to Chicago, via Jacksonville...	53.18

Sailing from New Orleans Saturday, October 25th, forty-eight hours to Havana, complete round trip one week.

Sailings from Havana to Key West, daily except Thursday and Sunday. Daylight trip, 11 A.M. to 7 P.M.

Also in this connection will advise that passports and deposits covering reservations are necessary. In addition passengers will be required to carry with them certificates showing full payment of 1917 and 1918 income taxes or exemption therefrom. These may be obtained from the local Collector of Internal Revenue. For further information, address F. S. Bishop, C. P. A., 112 West Adams St., Chicago, Ill.

D. C. BACON, *Chairman*,  
Transportation Com. N. D. A.  
31 N. State St., Chicago, Ill.

## National Dental Association Twenty-third Annual Meeting, New Orleans, October 20-24, 1919.

### Official Call

To the Officers and Members of the National Dental Association:

The twenty-third annual meeting of the National Dental Association will be held at New Orleans, October 20-24, 1919.

The House of Delegates will convene at 10:30 a. m., Monday, October 20, in the Gold Room, Grunewald Hotel.

In the House the representation of the various constituent societies for 1919 is as follows.\*



Alabama .....	271	Porto Rico .....	0
Alaska .....	0	Rhode Island .....	122
Arizona .....	19	Southern California .....	442
Arkansas .....	164	South Carolina .....	261
Army Dental Corps .....	350	South Dakota .....	206
California State .....	802	Tennessee .....	124
Colorado .....	223	Texas .....	545
Connecticut .....	388	**Trustees .....	...
Delaware .....	0	Utah .....	133
District of Columbia .....	122	Vermont .....	60
Florida .....	179	Virginia .....	200
Georgia .....	268	Washington .....	564
Hawaiian Islands .....	21	West Virginia .....	221
Idaho .....	6	Wisconsin .....	741
Illinois .....	2344	Wyoming .....	34
Indiana .....	1046		
Iowa .....	889	The scientific sections of the National Dental Association, the Dental Corps of the Army, the Dental Corps of the Navy, are entitled to one delegate each.	
Kansas .....	404	The general meeting, which constitutes the opening exercises of the Association, will be held at 9:45 a. m. Tuesday, October 21st. The various sections of the National Dental Association will meet Tuesday, October 21, at 2 p. m., and subsequently, according to their respective programs.	
Kentucky .....	338	The registration department will be open from 8:30 a. m. until 5 p. m. on Monday, Tuesday, Wednesday and Thursday, October 20, 21, 22 and 23, and from 8:30 a. m. to 10 a. m. on Friday, October 24.	
Louisiana .....	137	The registration office will be in Parlor E, second floor, Grunewald Hotel.	
Maine .....	112	C. VICTOR VIGNES, President.	
Maryland .....	199	OTTO U. KING, General Secretary.	
Massachusetts .....	1027		
Michigan .....	923		
Minnesota .....	879		
Mississippi .....	159		
Missouri .....	1067		
Montana .....	144		
National Capitol .....	41		
Navy Dental Corps .....	51		
Nebraska .....	421		
Nevada .....	0		
New Hampshire .....	15		
New Jersey .....	604		
New Mexico .....	67		
New York .....	1783		
North Carolina .....	146		
North Dakota .....	296		
Ohio .....	1310		
Oklahoma .....	319		
Oregon .....	277		
Pennsylvania .....	1441		
Philippine Islands .....	1		

\*This roll will be officially revised September 19, 1919.

\*\*\*Trustees shall be members of the House Constitution and By-Laws, Article V, Sec. 1 of Delegates, without the right to vote."

### Fixed Bridgework

In fixed bridge work the aim must be, to avoid or minimize unreasonably excessive abnormal stress; to group together as nearly as possible only teeth which have similar functional activities; to make an attachment to them which will insure sufficient integrity to withstand the stress imposed, and to make ample provision for the requirements of sanitation. When these combined factors may be correctly and favorably observed, then there is a place for fixed bridge work, then its use is indicated, and then nothing will take its place and serve the purpose quite so well.

But when all of these requirements may not be observed, or may not be possible, then fixation is contraindicated, and a removable type of structure is demanded.—*H. J. Goslee, National Dental Journal.*

# CORRESPONDENCE

To the Dentists of the United States:

Venereal diseases are a serious menace to the health of the Nation. The United States Public Health Service, in co-operation with the State Boards of Health, is making a vigorous campaign for their prevention and control and desires your active cooperation.

The Public Health Service recognizes the especial importance of interesting the dental profession, because venereal diseases, particularly syphilis, have been transferred to innocent persons including dentists themselves, through the medium of dental operations.

Furthermore, the public is fast awakening to the fact that the treatment rendered them by the dentist may have a direct bearing on the condition of their general health.

The following bulletin outlines your responsibility in this important health work. Will you meet your responsibility and help your State Board of Health to win this battle against disease?

An agreement card follows, which please sign and mail today.

Respectfully,  
RUPERT BLUE, *Surgeon General*

TREASURY DEPARTMENT  
UNITED STATES PUBLIC HEALTH SERVICE  
DIVISION OF VENEREAL DISEASES.

Appreciating the seriousness of venereal diseases among the civilian population, as indicated by the reports of the Surgeon General of the Army, I hereby give assurance of my best efforts in cooperating with the United States Public Health Service and my State Board of Health to reduce the prevalence of venereal diseases, and specifically do I agree:

1. To report all venereal disease cases which come under my observation in my practice in accordance with the laws and Board of Health regulations of my State.
2. To advise treatment for all such venereal disease cases which come under my observation, referring them to a clinic or a physician known by me to be competent in the treatment of such cases.

(Name) .....

(Street) .....

(City and State) .....

Date: .....191....



## AN APPEAL TO DENTISTS FOR COOPERATION IN THE FIGHT AGAINST VENEREAL DISEASES.

The war turned the spotlight on many things heretofore neglected or avoided. No disclosures were more startling than those showing the destructive inroads of venereal disease on the health and efficiency of the Army and Navy.

From the time the United States entered the war in April, 1917, to September, 1918, the loss to the Army from venereal disease represented 2,295,000 days of service.

Now the war is over!

The Nation is on its way to a peace basis.

Interest begins to turn from the fighting efficiency, the Army to the reconstructive power of industry; and as it turns, this striking fact stands out: All venereal diseases in the army were caused by conditions in civilian life. The Army and Navy, as organizations, do not tolerate prostitution.

### TESTIMONY OF THE ARMY

Immediately following the declaration of war, the Army Medical Department organized to cope with venereal disease, and one of the first points emphasized by its Surgeon General was that each individual case must be treated under competent medical supervision until cured. He laid special emphasis on two points:

1. The ineffectiveness of self-treatment by the use of simple or patent remedies.
2. The danger of quack doctors, who advertise to treat so-called private diseases.

Nineteen months of war have shown conclusively the value of proper methods of treating venereal cases in the Army.

### MAINTAIN INDUSTRIAL EFFICIENCY

For the protection of the fighting men as they return home, and to maintain maximum industrial efficiency, venereal disease among the civilian population must be kept under control. There is the same necessity for proper methods of treatment as existed in the service. Self-treatment and quackery must go.

### RESPONSIBILITY OF DENTISTS

Dentists must share the responsibility for preventing the spread of syphilis. It is found in all walks of life, all classes of society, and it is too often not recognized when examinations of the mouth are made for dental treatment. Persons who have lesions in the mouth and know they have syphilis, and admit it, do not as a rule seek the services of a dentist unless compelled to do so. Those who have lesions and are unaware of their condition present themselves to the dentist unsuspectingly, and for that reason are a serious menace to the health of the dentist and his clientele.

The ease with which the disease is transmitted is well known to the members of the profession. A break in the skin or mucous membrane, a spirochæte gaining entrance and passing into the circulation,—and infection occurs. Syphilis is no respecter of persons; neither is it a respecter of tissues. The simple scaling of the teeth may, and usually does, involve a breaking in the continuity of gum tissue and exposes the patient to any infection carried on an unclean instrument. In this connection the Surgeon General, recognizing the extreme requirements of surgical cleanliness, and the difficulty with which the germ of syphilis is destroyed, recommends and urges that dentists continue to study and practice the principles of asepsis in all phases of their work. You are reminded that the

saliva of those infected with syphilis is usually loaded with spirochaetes, and that it is not necessary that blood be drawn from a patient in order to infect another through the application of instruments.

Recognizing the various lesions found in the mouth, which are signs of definite diseases, requires clinical knowledge and experience. Many infectious diseases produce lesions in the mouth, and the study of these lesions which might enable the dentist to recognize such infections, as well as the infection of syphilis, is extremely interesting and should be of material benefit to the dentist. It is believed that if the question of venereal diseases were discussed more freely and frequently in study clubs and dental societies, it would be a benefit to society, and reflect credit on the dental profession.

Recent investigations have clearly proved that dental structures are an important part of the human economy. The man who treats his case symptomatically is most likely to fail. Dentists have been confronted with increased responsibility in the matter of general health, not merely because they have aspired to greater things, but because it has been thrust upon them, and the proposition must be met face to face.

#### COOPERATION OF PHYSICIANS, DRUGGISTS, AND ADVERTISING MEDIA.

The campaign now being carried on among dentists is similar to those carried on with physicians, druggists, and advertising media. It should interest you to know that approximately 61,000, or nearly 50% of the physicians of the United States and that approximately 28,000, or nearly 60% of the druggists of the United States have signed and returned agreement cards obligating themselves to cooperate; and in addition to these more than 99% of all newspapers and periodicals in the United States carrying advertising, have pledged themselves not to carry quack advertising.

#### WEIGH THESE QUESTIONS.

Will the dental profession accept its share of the burden which this work requires? On receipt of the accompanying blank, properly signed, the Public Health Service will ask your State Board of Health to supply you with additional scientific and miscellaneous literature.

RUPERT BLUE,

*Surgeon General, United States Public Health Service*

#### Texas Dentists—Look Out!

The following literary gem reached us, September 27:

Rogarville Texas

Sept. 24, 1919.

Kind Sir I will informe you that I wanten to go in to Dintle Work and I am riting you for a free catlounge. I only wante the Pluger and the Crowening and Pulling out fit. Send me the catlounge with thim in it and al so the in Struction Bok sone. Sandy Page.

This is amusing—but it may result seriously, if the fellow is allowed to "operate" unchecked.



# NEWS and OPINIONS

CONDUCTED BY G. E. HARTER

## Warning!

**TO ALL DENTISTS:** In order to avoid the chance of annoyance and loss of money, make no purchases and pay no money to strangers, or to representatives of concerns not personally known to you to be well established and reliable in every way. Do not accept checks from strangers in payment of bills for services or anything else. Do not cash checks for strangers. Do not invest money in anything, any scheme, oil well, mine, orchard, farm or factory without first submitting the whole thing to a banker or A1 business man well known to you. Do not sign any kind of paper, subscription blank, note, letter--anything presented by anyone not known to you to be reliable and which has not been thoroughly investigated by you or by some business man or banker. Schemes that offer unusually large returns are almost sure to be fraudulent. Money is seeking investment in anything promising large returns, and it usually is quite unnecessary for any one to solicit funds for investment in them.

**Keep your money and your money will keep you.**

A dentist at Newcastle, Ind., was fined the other day, one whole dollar for intoxication. It was proven that he had taken one little drink. It took three hours for the jury to decide the case. There were four clergymen, three deacons, a prohibition leader and four business men on the jury. The cost of the case could not have been much less than \$100, if the time of the jurors was worth anything, and it is to be appealed. We hold no brief for the saloon, but it does seem that common sense might have had a little to say.

Canadian educational authorities report great satisfaction with the result of free school clinics. The work is to be extended.

Can you use a few copies of our Industrial Dentistry reprints? You are quite welcome to them.

If anybody is interested in knowing how to conduct the affairs of a State director of oral hygiene, he should write to Dr. A. G. Buckner, Nashville, Tenn. A better plan is for some of our societies to get him on their programs for a talk. It's well worth while.

Dr. B. Holly Smith, dean of the old Baltimore Dental College, is trying to arouse interest among the officials of his city in the establishment of school clinics. More power to him.

Dentists of the Thirteenth Indiana District held their annual picnic at South Bend August 7, the chief attraction of which is said to have been the ball game

between the "Fillers" and the "Pullers," the teams being led by Drs. C. L. George, of Elkhart, and J. K. Hitch, of Plymouth. We have no report of the score, but suppose it has not, as yet, been computed.

A dental equipment has been installed in connection with the emergency hospital at Dallas, Texas.

The Omaha school clinic is now housed in the City Hall, having outgrown its quarters in the Brandies building.

Dr. Walter B. Reeves has returned from France to his home in Columbus, Ohio, after more than two years' service in France, bearing the rank of Captain.

Dr. Charles K. Adams, York, Pa., U. of P., '19, will sail in October for the Far East, where he will practice his profession. His address will be Kuala, Lumpur, British Malay Peninsula.

Druggists are now offering for sale a powder to be sprinkled upon artificial plates, which is guaranteed to hold them solidly in place for ten to fifteen hours, against all assaults of hard apples, corn-cob, hickory nuts, and sich. Especially guaranteed to prevent the loss of plates worn by flivver drivers.

And now for the four-year course in dentistry! If only some magic agent could be found that really could be used to make students THINK, think rationally, coherently, the four-year course, even the three-year course, would be unnecessary. If some way might be found to imbue the minds of students with a tenth of the alertness displayed by the average kitten in learning to catch a mouse, we might hope to turn out A1 dentists—not in four years, nor yet in three years; but in much less time. I grant that the human mind is the most wonderful proposition in the universe, once it begins really to operate. But why, in the name of all that's rational, should it be so slow in starting?

Charlotte, N. C., is to have free school clinic, served by local dentists. Also Mobile, Alabama.

Thieves are again getting busy in dental offices, after a year's lay-off. Reports of thefts are coming in again from all parts of the country, gold and anesthetics receiving the greater part of the unwelcome attention of the looters.

## THE DENTAL SUMMARY

You'd better be careful about extracting teeth. The lay press this month brings reports of several cases in which dentists are being sued for heavy damages because of the "unnecessary" extraction of teeth.

Went down to Nashville to attend the Tennessee State meeting Sept. 4; and if anybody thinks the South is not wide awake on dental progress, another guess is due. I have attended about fifty conventions during the past twelve years, and the one at Nashville compares with the best of them—to its advantage. Never saw a convention quite so well handled, while the program was a pippin. I'm going again, fates willin'. Yes, I know it's "The Land of the Minus G," but it's also the land of whole-souled hospitality, fried chicken and watermelons!

We are devoting considerable space this month to the Government anti-venereal movement, and the subject most certainly is well worth the serious consideration and earnest support of every dentist. Next month we expect to print proceedings of a meeting of the Washington, D. C., Dental Society, which will add something to the literature on the subject.

The Jersey City board of education has taken over the Department of Dental Hygiene from the city health board, adding five dentists and the corps of nurses to the school health department. Close watch is to be kept of the health of the school children.

If you are a graduate of Vanderbilt, or are interested in its welfare to the extent of being willing to help, write Dr. Ewell Neil. Dr. R. Boyd Bogle, or any member of the faculty and ask him how you can be of practical assistance. Do it right this minute.

Under the management of Dr. H. F. VanVrezen, assisted by Dr. H. B. McMillan, the work of the Grand Rapids, Mich., free clinic will be greatly extended, at least four operating rooms in operation in different parts of the city. The work is to be pushed as rapidly as funds available may allow.

Among the clippings that came to my desk this month is one bearing the heading: "Teeth in Trust Bill," and I wondered what the porcelain fellows had been doing until a second glance showed me that the intelligent clip-artist supposed that all sorts of teeth came under the dental head, including those that are expected to bite off the heads of profiteers.

The man who formerly worshiped the dollar shouldn't worship anything less than a dollar-sixty-nine now.

Five free clinics are now at work down at Columbus, Ohio.

School board of South Bend, Ind., is about to open a dental clinic.

Ramona, 'way out in South Dakota, has a free school clinic; and, what is more, the benefits of free dental service are to be extended to every school in the county—all through the efforts of one nurse—Miss Merlin Wilkin. If you want to know how she did it, write her.

L. L. Sheffield, D.D.S., 640-641 Ohio building, Toledo, Ohio, announces that on and after October 1, 1919, his practice will be limited to prosthodontia.

### Peddling in Uniform

When you see a man in uniform peddling souvenirs, do not jump to the conclusion that he is a poor soldier in need. In all probability he is an imposter, using the American uniform as a stock in trade for making a living. It is your duty to notify the nearest policeman and have his case investigated.

Colonel Arthur Woods, Assistant to the Secretary of War, has written to the chief of police in every city in the United States asking for the co-operation of the police in dealing with the peddler, panhandler, and street fakir in the uniform of the army and navy. The uniform, he says, is as sacred as the flag itself, and the police forces of the country can do no finer thing than "go to any limit to protect it."

### Build Now for Reconstruction

The War Department, through Colonel Arthur Woods, is urging State, City and County officials to push work on public buildings in order to provide jobs for returning soldiers and sailors. There has been a gratifying response to this advice, because it is universally felt that the immediate return of ex-service men to suitable employment is of the utmost importance. In commenting on the possibilities of this means of reconstruction, Colonel Woods says:

"Every contract which is let makes more work in the forests, at the mines, in the quarries and at the railroads, in addition to the labor requirements of the operation itself, and this means more jobs for returning soldiers and sailors."

Cincinnati, O., Sept. 9, 1919.  
To Whom It May Concern:

The following former members of the faculty of the Ohio College of Dental Surgery announce their resignation and complete withdrawal from the institution.

HUGH W. MACMILLAN,  
C. H. BURMEISTER,  
R. C. HARKRADER.



## THE DENTAL SUMMARY

### Columbia University—Advanced Courses in Dentistry—Full-Time Series

Full Plate Prosthesis, Bar and Saddle Prosthesis, Bacteriology—Already under way.

**Dental Ceramics**—Some new points on the most esthetic productions of the art. Dr. George A. Thompson, Chicago, Ill. Beginning October 6th.

**Cast Gold Inlay**—Direct and indirect methods of obtaining proper restorations. Dr. Henry W. Gillett, New York City, and Dr. George A. Thompson, Chicago, Ill. Beginning October 6th.

**Root-Canal Technic**—New solutions of old problems. Dr. Elmer S. Best, Minneapolis, Minn., and Dr. John W. Scherer, East Orange, N. J. Beginning October 13th.

**Dental Radiology**—Accurate Roentgenograms by control of the central rays—stereoscopic radiology. Dr. F. T. VanWoert, New York City. Beginning October 13th.

**Anesthesia**—Effective but safe means of producing local and general anesthesia. Dr. Douglas B. Parker, Brooklyn, N. Y. Beginning October 20th.

**Exodontia**—Clinical instruction and practice in refinements of old methods and a few new ones. Drs. Henry S. Dunning and Morris I. Schamberg, New York City. Beginning October 27th.

**Periodontia**—Successful methods of treatment and limitations. Dr. J. Oppie McCall, Buffalo, N. Y., and Dr. Paul R. Stillman, New York City. Beginning November 3rd.

### Special Course in Peeso Removable Bridgework

**Instructors**—Drs. Fred. A. Peeso, Frank Peeso and Mr. Arthur N. Cross.

**Hours**—10 a. m. to 5 p. m. daily, 4 weeks, beginning January 5th.

**Fee**—\$210.

This course has been added to meet the increasing demand for instruction in a system of efficient removable bridgework. Under the direction of the instructors, each student will construct a technic case and when same has been approved, a practical case will be selected by Dr. Peeso from the Infirmary. All the operative and prosthetic work, including abutment preparation, and crown, dummy and saddle construction will be taught by steps and the student must carry each case to completion before the expiration of the course.

For those students who have not received post-graduate instruction in Root Canal Technic, the following supplemental course is planned and should be attended, in order to qualify for the technic of the Peeso course.

### Root Canal and Radiology Technic (Supplemental Course)

**Instructors**—Drs. Scherer, Nestler and Van Woert.

**Hours**—10 a. m. to 6 p. m. daily, 1 week, beginning December 29th.

**Fee**—\$48.

Instruction will be given in the approved method of cleansing difficult root canals preparatory to their use as abutments for bridgework. The accurate taking of intra-oral films of the roots and adjacent areas, and reproducing same, will be followed.

### Virginia—State

Richmond, Sept. 1.—After a week of intensive work in classes, lectures and clinics, the Virginia State Dental Association has closed its fiftieth annual session at the Medical College of Virginia. Instead of having a few papers read and a number of social functions, as heretofore, the meeting this year was devoted exclusively to the teaching of three subjects selected for their paramount importance to the dental profession.

Only members of the state association were permitted to take these post-graduate courses. The men taking the courses were from every section of the state, and they were drilled the entire week in the classes which they selected.

New and scientific methods were taught in oral anesthesia, by Dr. Theodore Blum, of New York City.

Dr. A. L. Gray, of Richmond, conducted the classes in X-Ray work.

The tonsils entered also into the discussions of the importance of the mouth in its relation to the general health since the tonsils are often the seat of grave infection.

In the course in crown and bridge work the latest and most improved methods for the restoration of lost teeth were taught by Dr. Forrest H. Orton, of Minneapolis, assisted by Dr. Allen, of Boston.

**Classified** Advertisements under this heading, \$2.00 each for 60 words or less; additional space 2 cents per word, single insertion; three insertions or more, special rate on application.

**WANTED** Dentist to take X-Ray Pictures, previous training unnecessary. Salary or commission. Box 1020C The Dental Summary.

**WANTED** The demand for our graduate Dental  
**DENTAL** Mechanics comes from all parts of the  
**MECHANICS** United States and Canada, and exceeds the supply. We teach men and women this paying professional trade, with practical work at the bench from the start. Individual instruction, competent instructors, fully equipped laboratories. School open from 9 A.M. to 10 P.M. Porcelain Castings taught by the new Weldon Process. Write for illustrated catalog. Dept. 8A, West Side Y. M. C. A. School of Mechanical Dentistry, 318 West 57th St., New York City.

## Deaths

At Storm Lake, Iowa, September 5, Dr. M. G. Tiekvold, a successful, wealthy and prominent dentist, a member of the city council and in every way respected, ended his life by taking a dose of carbolic acid, dying in about twenty minutes. He was 45 years old. No reason for the act can even be guessed at.

At Fairmount, West Virginia, August 17, of typhoid fever, Dr. James E. Dowden, aged 71.

At Cleveland, Ohio, August 31, Dr. Lambert E. Brown, retired, aged 69.

At Rockville, Conn., August 28, of heart trouble, Dr. William C. MacGeorge, aged 57.

At Beaver, Pa., August 27, of paralysis, Dr. Joseph C. Shumaker, aged 50.

At New York City, August 26, of heart disease, while attending a patient in his office at Tarrytown, Dr. Townsend V. Roe, aged 65. For many years Dr. Roe had been connected with Bellevue hospital.

At New York City, August 23, Dr. Jacob White, aged 50.

At a Cleveland hospital, August 12, Dr. Roy Jones, of that city, died of the effects of injuries received by being thrown headlong from an auto truck south of Willoughby. He was but 27 years old, and a recent graduate of Western Reserve.

At Brooklyn, New York, September 6, of pneumonia, Dr. Edward Stevens Rugg, aged 55.

The classmates and friends of Dr. Edward N. Rawson mourn the loss of their friend and co-worker. Dr. Rawson was born in Cleveland, October 19th, 1895. He was a graduate of the dental department of Western Reserve University, Class of 1918, and a member of the Psi Omega Fraternity. His death occurred at Charity Hospital after a brief illness of Pleural Pneumonia.

## A Big New York Clinic.

New York City, Aug. 24.—A plan for affording free dental attention, with special emphasis placed upon constructive follow up work among children of pre-school age, and including school children as well, has just been instituted by the New York Association for Improving the Condition of the Poor among the residents of the Italian section of Manhattan.

Bailey B. Burrirt, general director of the association, emphasized yesterday the preventive dental work this clinic was expected to accomplish. While it is an impossibility for the community to eliminate the decay now existing in the teeth of children of school age, Mr. Burrirt contends that by a constructive dental program among the younger children 70 to 80 per cent. of this decay can be prevented. New York City has not made any appreciable beginning with such a program as yet,

Mr. Burrirt added, but he said it was time to start it now. He cited the case of the city of Bridgeport, Conn., where such a campaign of preventive dentistry had been carried further than any other city of the country, and said that experience there showed that this dental work, treating the individual cases twice a year, cost the city about \$1.50 per child a year.

The clinic was started by Dr. Dwight R. Wilson in the Italian Day School of the Children's Aid Society, where one of the larger ground floor rooms has been loaned and equipped for this work.

Special attention is being given to children between the ages of five and eight years. Careful card records are kept of all cases coming to the clinic. This data comprises the child's name, age, height, weight and general health and appearance, and subdivided spaces are provided for noting the first clinical work done for the child. At the bottom of the card is noted the date on which the child is expected again at the clinic, usually six months after the first work.

An idea of the magnitude of this work may be had from the last census figures for that District of Manhattan, which placed the total inhabitants at 38,269. As many as 3,000 people live on some of the blocks, and it is estimated that about four children constitute an average for a family.

Practically every phase of child dental welfare will be handled at the new clinic excepting orthodontia, which will not be included in the work for the present.

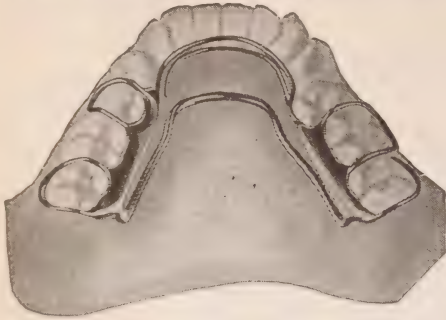
## New England Dental Society

Boston, Sept. 6.—The 25th annual meeting of the New England Dental Society, held in the Hotel Somerset for the past three days, came to a close yesterday, with post-graduate lectures at Tufts, Harvard and Forsyth Dental Infirmary. General clinics were held at Tufts Dental School, under the direction of Dr. Curtis W. Farrington and at the Harvard Dental School under the direction of Dr. Julius F. Hovestadt.

Surgical clinics were held under Drs. Arthur Smith, R. H. Horton, Harry Shuman, Leroy M. S. Miner, William H. Canavan and Charles M. Proctor. Prosthetic clinics were held at Tufts. The "porcelain crown" was demonstrated by Dr. J. K. Knight. The "Sharp crown system" was shown by Dr. J. K. Knight, Jr., Dr. Walter E. Farris demonstrated "prosthetic clinics," and Dr. Herman B. Nesbitt showed "prosthetic restoration." A clinic in removable bridge and the application of paralleometer was conducted by Dr. Alexander Fortunati. Dr. George Baker demonstrated orthodontia.



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### New Work for Rochester Dispensary

Rochester, N. Y., Aug. 28.—With the re-opening of the Rochester Dental Dispensary on Tuesday after having been closed for three weeks, the new surgical department for operations on children for the removal of adenoids and for the treatment of tonsillar troubles, cleft palate and hair lip was placed in service. The service in this department is open to all children under 16 years who have first had their teeth cared for. Children of the city will be treated first and those outside the city, so far as possible, will be treated later.

Dr. Edwin S. Ingersoll is chief of the staff in this new department. The plan is to take the child to the dispensary between 7 and 8 o'clock in the evening, perform the operation, and keep the child there all night. Dr. Warren Wooden is in charge of the anesthetics and Dr. Stearns S. Bullen is his assistant. Miss Eleanor Spencer, of Spencerport, is in charge of the nursing, with Miss Minnie Judson, of Rochester, as assistant.

The German Constitutional Convention has completed its consideration of a bill creating a court to try those accused of starting, lengthening and losing the war, says a dispatch from Berlin. We hope they appoint very young men as judges.

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## Georgia—Third District

Americus, Ga., Aug. 8.—Third district dentists met here yesterday and organized the Third District Dental Society, with Dr. A. H. Kendall, of Cordele, as president. Other officers chosen were Dr. Eli Barnett, of Butler, vice-president, and Dr. J. C. Patton, of Cordele, secretary-treasurer.

Americus dentists were hosts to the visitors, and it was voted to hold the next meeting in Cordele in December. Dr. S. H. McKee and Dr. H. H. Glover, of Americus, were named an executive committee, and directed to prepare by-laws for the government of the organization.

## Is There No Public-Spirited Dentist in Dallas?

Dallas, Texas, Sept. 3.—Owing to the fact that the City Health Department has been unable to find a dentist to conduct a dental clinic, dental equipment valued at \$1,000 at the Emergency Hospital has been lying idle for almost two weeks. The time for the clinic involves only a few hours in the afternoon, for which the city is offering \$50 a month as salary. Dr. Lee Hudson, superintendent of the Emergency Hospital, said yesterday.

## Dental Corps for O. N. G.

Columbus, O., Sept. 6.—Authority to establish a dental corps for the Ohio National Guard, to consist of one officer and one private to each 1,000 of the total strength of the Guard, was given Adjutant General Layton yesterday by the war department.

## A Splendid Southern College

Memphis, Tenn., Sept. 7.—Dr. J. R. Gardner, dean of the College of Dentistry of the University of Tennessee, announced yesterday that the appropriation made by the trustees of the university had enabled the dental school to make improvements which bring it to the front as one of the best schools in the country. In standing and rating the school has long enjoyed this reputation, but the improvements will make it physically possible to widen and broaden this work.

"On my recent inspection tour through some of the best dental colleges in the country," said Dr. Gardner, "I secured some very valuable information, which has been incorporated in the plans for remodeling Rogers Hall, the home of the dental department."

Dr. Gardner spoke enthusiastically of the future of the school. He was gratified, he said, at the splendid compliment paid the school by the trustees, particularly by Gov. Roberts. The governor praised the work of the dental department of the university. He said he felt that there was a great need for dental education among the laity.

Several minor changes in the dental faculty have been made this year. Dr. Gardner says these changes greatly increase the capacity of the teaching force.

Dr. Gardner says the prospects for a large student body for the closing term are the best in years. Candidates for admission are requested to make application to the registrar, 718 Union Avenue.

Georgie White says: Mr. and Mrs. Wilson are the best president we have ever had."

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# Dr. Cattell Returns to Vanderbilt

With great pleasure we announce that our good old friend, Dr. D. M. Cattell, has renewed his connection with the School of Dentistry, Vanderbilt University, Nashville, Tenn. As a teacher his reputation is so well established that

we do not hesitate to state that the teaching staff of Vanderbilt-Dental is greatly strengthened by his return to the Faculty, in which he ably held a place from 1903 to 1909. This announcement will be good news to every friend of Vanderbilt.

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NO HARRISON-LAW BLANK REQUIRED

Approximately 4000 army dentists in a combined attack on the jaws of nearly 2,000,000 doughboys succeeded in capturing 67,133 teeth during one month alone. All records for tooth extractions in the A. E. F. were broken in that month when this enormous number of teeth was removed from the aching jaws of America's

"Over Here" heroes. Pulling teeth was not the only occupation of the heartless army dentists, for during the same month 376,655 fillings were put in. The chief dental surgeon of the A. E. F. reports that during the course of hostilities seven army dentists were killed by shell fire and that over 40 were injured.

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Supply Dentaline as part of treatment, to be included in total fee, rather than sell it separately during the treatment. After case is discharged, the use of Dentaline should be continued as a dentifrice; no other tooth preparations should be used.

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# REGULAR CONTRIBUTIONS

## THE DENTAL SUMMARY

THE MAGAZINE THAT HELPS

Vol. XXXIX

November, 1919

No. 11

### A FEW FACTS RELATIVE TO CONDUCTIVE ANESTHESIA

BY WILLIAM A. COOK, D.D.S., DETROIT, MICHIGAN

**T**HE RESEARCH WORK for this article was done in the anatomical laboratory of the medical department of the University of Michigan, and the writer acknowledges a debt of gratitude to Dr. Rollo E. McCotter, professor of anatomy, for the use of material, special instruments, etc.

The dissected specimens are preserved that they may be used for reference.

The writer wishes to differentiate between dental and surgical anesthesia.

By dental anesthesia he means an anesthesia with which one can prepare cavities, vital abutments and extirpate pulps painlessly.

By surgical anesthesia the writer means an anesthesia with which one can perform surgical operations as resections, curettements, extractions, reduction of fracture, removal of impacted teeth, etc.

There seems to have been inconstant results generally in producing dental and surgical anesthesia by the mandibular injection. At one time a mandibular conductive would produce complete anesthesia for both dental and surgical operations and again a mandibular injection would fail to produce complete anesthesia for dental operations and at the same time surgical anesthesia would be complete.

It seems that the greatest trouble is encountered when the injection is made for the removal of pulps from teeth.

The writer believes that the findings described in this article are the ground work for more perfect results with mandibular conductive anesthesia, especially with regard to the failure to produce satisfactory results when the mandibular injection is made for pulp extirpation.

In the first instance the prime factor of conductive anesthesia (nerve blocking) is to know the origin, course and distribution of the sensory nerve supply to the part in which one wishes to produce anesthesia that he may be able to locate that supply and block it.

Unless one is familiar with these facts, he probably will not recognize his point of error when he has failed to get anesthesia in a part in which he has expected it.



A great many of our failures to get desired results with conductive anesthesia have been because we have not known the sensory nerve supply to the internal of the mandible.

This brings us to the all-important fact that the inferior alveolar nerve is not the only internal nerve supply to the mandible. In some cases there are at least three other internal nerve supplies to the mandible.

The first one we wish to mention is a terminal branch of the lingual nerve. This enters the mandible through a foramen in the genial tubercle region. This foramen usually is located at the upper border of

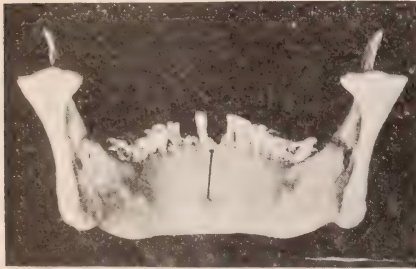


Fig. 1

Fig. 1—Shows a pin entering the mandible through a foramina at the superior border of the genial tubercle.

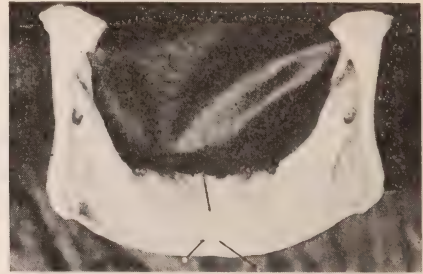


Fig. 2

Fig. 2—Shows pins entering foramina at the superior border of the genial tubercle and also beneath the genial tubercle.

the genial tubercle (*Fig. 1*) but the location varies and it may be below the tubercle, and too there may be two or more foramina in the genial



Fig. 3

Fig. 3—Shows pins entering foramina at the genial tubercle and also in the bicuspid region.

tubercle region (*Fig. 2*), each transmitting a branch of the lingual nerve.

The lingual nerve which is the sister branch to the inferior alveolar from the mandibular division of the trifacial is a sensory nerve, the same as the inferior alveolar. Therefore it is logical to presume that with branches of the lingual nerve entering the mandible that they transmit sensory impulses and would have to be blocked to produce complete anesthesia of that region.

The second internal mandibular nerve supply enters the mandible through a foramen or foramina on the lingual aspect of the mandible in the bicuspid region (*Fig. 3*). The writer cannot say that this supply is always present, but often the foramen is large and transmits a nerve which undoubtedly is a potent factor in the internal nerve supply of the mandible. The dissections show this nerve to come from an anastomosis between branches from the lingual nerve and branches from the submaxillary ganglion. But as the sensory supply to the submaxillary ganglion is from the lingual nerve, it would make no material difference which was the source.

The third internal nerve supply to the mandible is from the long buccal. Quite large branches from the long buccal nerve often times are transmitted to the internal of the mandible through foramina near the gingiva.

The long buccal nerve also is a sensory branch from the mandibular division of the trifacial and must be blocked to produce complete anesthesia of the region it supplies.

The writer cannot say that the long buccal supply to the internal of the mandible is constant, but it is present in some of the dissected specimens.

The writer has produced complete dental anesthesia by a slight injection of the long buccal nerve, after a mandibular conductive had failed to produce it.

The reader will note that the two nerve supplies entering the mandible on its lingual aspect are from the lingual nerve. Therefore if one has made a complete blocking of the inferior alveolar nerve then a complete blocking of the lingual nerve should produce complete anesthesia for the extirpation of pulps (dental anesthesia), provided the long buccal does not send in a branch.

The writer has produced complete anesthesia for pulp extirpation by injection of the lingual after a mandibular (inferior alveolar) had failed to produce dental anesthesia. Also the writer has had others report success with the same technic.

It is impossible to say absolutely just where one errs when he fails to get the desired results with conductive anesthesia, because of the many possibilities to make errors. The technic may have been at fault. And as a matter of fact, conductive anesthesia has been and is a "hit and run play" in many operators' hands. But if the unsuccessful operator will perfect his knowledge of the field in which he is working by becoming familiar with the anatomy, and then observe the proper technic, and keep in mind the few facts set forth in this article, he will materially lessen his troubles and add to his successes with mandibular conductive anesthesia for both dental and surgical operations.



## ARMY ORAL SURGERY\*

BY MAJOR BERTRAM S. ROTHWELL, (BASE HOSPITAL 4, A. E. F.)

**I**N HEAD AND FACIAL wounds the maxillæ are involved and for this reason the dental surgeon with his knowledge of fractures and their treatment should be called upon as he would realize the desired result. The principal classification of these cases admitted to the hospital was:

1. The cleansing of mouth and surrounding areas.
2. Fixing of fractured parts to obtain normal occlusion.
3. The restoration of teeth and parts for the complete rest of the fractured maxillæ.

These injuries and fractures caused during this war would of course depend upon the type, shape, speed of the missile and at what position it would strike the head.

## BONY TISSUES

The inferior maxilla would be fractured under the classes of:

1. Simple.
2. Compound.
3. Multiple.
4. Comminuted, which includes all soft areas.

Then the fractures or loss of portions of the mandible would be caused by transmitted force of the missile. For instance, the missile would be traveling at great speed and when it came in contact with the mandible it would drive the fractured parts on through the face with the same velocity as the missile was traveling, thereby causing a wound with a small entrance but resulting in a large and comminuted exit. As in *Fig. 1*.

R. L. E. wounded August 7, 1917, by a piece of shrapnel entering the right cheek, causing a compound comminuted fracture of the right and left sides of the mandible at the bicuspid and molar region, involving the tongue and cheeks.

## FRACTURES

In fractures of this type caused by explosive bullets or shrapnel, the exploration was made under conductive anesthesia to remove the dried blood clot, as the patient was anywhere from twenty-four hours to five days getting to the hospital, fragments of dirt, teeth and completely-detached fragments of bone were removed. However, no bones or teeth were removed unless they were completely detached. When the wound was very septic, as is generally the case, free extraction was the rule.

\*Extracts from an illustrated lecture at the Psi Omega Fraternity Reunion at Cedar Point, Ohio, July, 1919.

That is to say, any tooth in the line of fracture, likely to become involved by absorption of the surrounding bone was removed. Sometimes a tooth was retained or the posterior fragment of the mandible which at first examination would seem to require removal, for it must be remembered that it is extremely important to have a molar tooth left for splinting purposes if possible, and the results to be gained by retaining it, even for a time at intervals while the patient is under treatment, and the condition of the area around the tooth and the progress

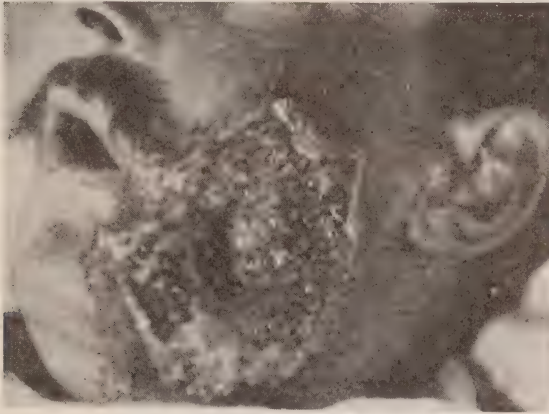


Fig. 1

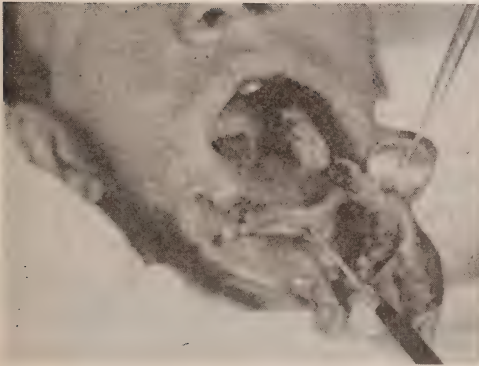


Fig. 2

of repair are carefully observed. At the time of extraction of the teeth drainage always is established. Pieces of split rubber tubing or rubber dam wick is placed between the ends of bone and brought down to points of lowest level of the wound to the submaxillary or submental regions. Should the position of the wound not be suitable for drainage, a fresh counter incision is made. The drainage is kept up for a few days being gradually withdrawn after ten days.



## DIAGNOSIS OF FRACTURES

In some cases it was not difficult to note the fractures of the maxillæ as in most cases large wounds were present and the fractured parts could easily be seen. Others would be such swollen and badly disfigured facial wounds that the only way and truest way to denote the fractures, foreign bodies and loss of bony structure, was by sending the patient to the radiographic department upon arrival. An antero-posterior view as well as the lateral were always taken. The points to be noted in the radiographic plates were:

1. The teeth involved in the fractured area
2. The amount of lost bony structure.
3. Types of displacements.
4. The foreign bodies, which consisted not only of metal, but dirt and displaced teeth

## SPLINTS

The impressions always were taken with plaster of Paris with the teeth remaining, well vasalined. The cases were splinted to normal occlusion. Upper and lower capped splints soldered together with ample room for feeding tubes were used. These splints were made of Victoria metal, other splints were made of vulcanite and aluminum according to the best advantage. These splints of metal were very easy to be kept clean and still the fractured parts were kept absolutely in a fixed position and in proper occlusion.

This particular splint (*Fig. 2*) was made for a patient who had total loss of mandible from second molar right to central left and fractured at right and left angles of rami. The lower was articulated to the upper by cementing a capped splint into position with tubing on both buccal sides.

An upper vulcanite plate was made with tubing parallel on the buccal sides to the lower, and the illustration shows the two splints fastened in position by trombone slides, this being done to keep the lower segment from swinging laterally because of two fractured angles. This type of splint could be kept clean by washing the lower splint with pledgets of cotton and pumice, while the upper could be detached and taken out. Still the lower would remain fixed until a suitable bone graft could be done.

The general classification of treatment was:

*First*, getting the patient as early as possible.

*Second*, freeing the mouth of septic teeth, teeth in the fractured area.

*Third*, drainage.

*Fourth*, not removing any loose bone unless obviously necrotic.

*Fifth*, absolute immobility of the fractured parts.

*Sixth*, stimulating the growth of callus.

## FRACTURES OF THE SUPERIOR MAXILLA

These cases were treated by:

*First*, extraction of septic teeth and fractured teeth in the fractured area.

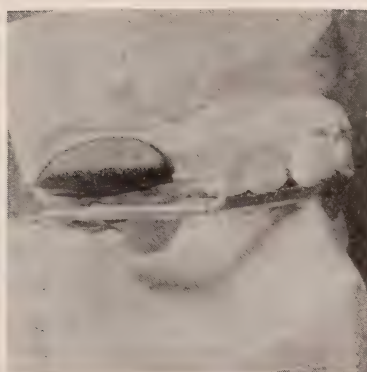
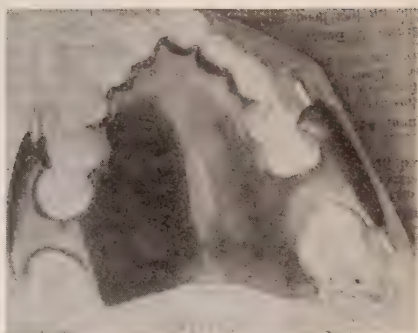
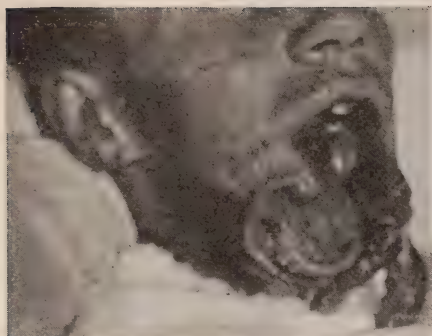


Fig. 3

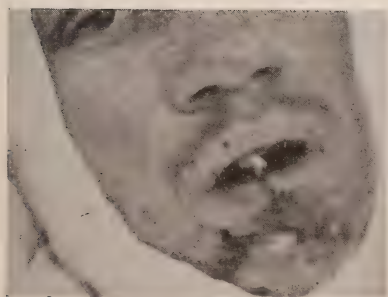


Fig. 4



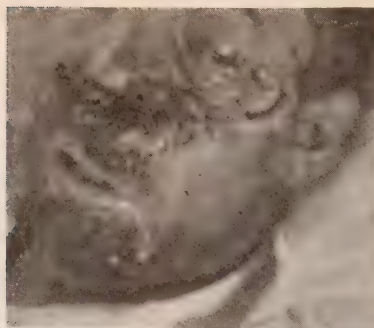


Fig. 5

*Second*, leaving loose bone to exfoliate itself.

*Third*, suturing of soft parts

*Fourth*, drainage.

*Fifth*, supporting the maxilla with head vulcanite splints.

810 Rose Building.

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### INTERPRETATION OF THE RADIOGRAPH\*

BY W. C. HESSLER, D.D.S., CRAWFORDSVILLE, INDIANA

THE X-RAY and the radiograph are valuable contributions to the art of healing. They assist us to discover obscure lesions and pathological conditions.

The X-ray makes no mistake. If error occurs, it may be the fault of the operator, or of his technic. Errors and mistakes in the reading and interpretation of the radiograph can and do occur.

It is the purpose of the essayist to point out a few of these errors.

In reading the radiographic film of plate, we interpret the rarefied areas in the hard tissues as being abnormal.

This rarefaction may be abnormal, but not pathological. It is not always possible to read and interpret the radiograph without a clinical diagnosis and especially, a history of the case. To make a fairly reasonable interpretation of the radiograph, it is best to have a clinical diagnosis, including the history of the physiological or pathological disturbances. Consult the attending physician whenever it is possible. Do not forget, that every local disturbance in tissue or organ, does not necessarily affect the whole organism.

In an article written by Dr. Cryer, of Philadelphia, and published in the *National Dental Journal* some time ago, Dr. Cryer showed a plate in which there was a great amount of rarefaction around the six upper incisors. This rarefaction was due to movement of the teeth by orthodontic appliances.

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\*Read before the Northern Indiana Dental Society, September, 1919.

The foregoing paragraph shows how easy it would be to make a faulty interpretation without a complete history and a thorough clinical diagnosis of the case. A patient, who was suffering from pain in the back of the neck and shoulders, was referred to the writer. There was no apparent evidence on the surface pointing to the cause of reflex pain from the teeth. Radiographs were made of all the teeth. After examining and reading these radiographs, certain crowned teeth were suspected, and these teeth were extracted. The pains did not subside after this was done. Finally, all the teeth were extracted, when pain completely subsided. Sections were made of these teeth, and several contained pulp nodules. The pulp chambers and root canals of the two molars were completely filled with secondary dentin.

Cases and instances could be cited without end. The radiograph may prove or disprove the clinical diagnosis, or, on the other hand, your conclusion may be nil. The chances are; that the X-ray may be exploited. When the radiograph is used *solely* for commercial gain and profit, it loses much of its value as professional assistance and a diagnostic adjunct. The X-ray, like the written articles of physicians, are being used to promote the popularity of some men. Extracts from these writings and addresses have appeared in signed articles published in our newspapers. These articles remind us of the story told about a merchant in a small town, who became envious of his fellow merchants. He evidently thought that he was not getting his share of the trade, so he ran the following advertisement in his local paper: "Don't go to the other fellow to be *cheated*, come to me."

Now, to close this spasm of fault-finding, let us conclude that it is not necessary to interpret every radiograph to show foci of infection. It is not necessary to do this to justify the annoyance and expense to the patient. It is sometimes advisable to have *more* than *one* radiograph made of the same tissues, but from a *different* angle for comparison, in order to get a proper perspective. This discussion is not to discount or to discredit the radiograph, but to urge the intelligent reading of the same.

Let us *use* the radiograph as a valuable assistant and aid to make a clinical diagnosis, and to use it with much intelligence.



## TEACHING THE PRINCIPLES OF MAXILLO-FACIAL SURGERY IN A CIVILIAN SCHOOL\*

BY CHARLES R. TURNER, D.D.S., M.D., PHILADELPHIA, PA.

A NUMBER OF FACTORS have a causative relationship to the establishment by the Surgeon General of the Army, of Schools of Plastic and Oral Surgery in civilian institutions during the fall of 1917. It must be remembered that at the time of the entry of the United States into the war and during the subsequent organization of the medical and surgical service of the army, the relatively-high percentage of wounds of the head and face already was known to the surgical world; the unhappy results which followed the necessarily tardy treatment of these cases in the armies of our allies early in the war was recognized, and the great desirability of improving upon these conditions in our own service was fully appreciated. Sir Berkeley Moynihan came to America in November, 1917, and impressed many of his hearers with the wisdom of the policy of early operation as it was then to some extent practiced in the British Army. Therefore, when Lt. Colonel V. P. Blair was called upon to organize, on behalf of the Surgeon General, the maxillo-facial service, he advocated that for cases of this type the earliest possible attention should be provided. He says<sup>1</sup>, "it seemed that the reason why most of the injuries of the face and jaws got to the slow reconstruction class was the want of proper early treatment, and that the utilization of the two professions to give proper early treatment required the co-ordinated efforts of a surgeon and a dentist, and that there must be such a surgeon and such a dentist available in every Advanced Station where injured were received; that to carry on the work properly there also should be stationed in each Base Hospital the same personnel. Further than that, for economy of effort and equipment and to save the patients the evil results of radical changes of treatment, it was desirable to have the same plan of treatment carried on everywhere, as the patients necessarily were evacuated from one hospital to another."

In further elaboration of the reasons prompting this course of action, Major Robert H. Ivy says<sup>1</sup>, "The general purpose in the mind of the Surgeon General in establishing short intensive courses of instruction in plastic and oral surgery was the outcome of the decision to place in base and evacuation hospitals a Section of Plastic and Oral Surgery to have

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<sup>1</sup> In a private letter.

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\*Read June, 1919, before the Section on Stomatology, A. M. A., of which THE DENTAL SUMMARY is the representative organ for the dental profession by special arrangement.

charge of injuries and diseases of the face, mouth and neck, the personnel to include a general surgeon with special experience in bone and plastic work, and a dental oral surgeon familiar with the treatment of infections, diseases and injuries of the mouth, and the making, application and adjustment of dental splints and appliances. It quickly was realized that there were comparatively few men working in general surgery familiar with the use of the various mechanical means that have been developed by the dental profession for the retention of jaw fractures. On the other hand, the training of the average dental surgeon does not fit him for doing major surgical operations. To meet the situation the following plan was formulated: To secure the services of general surgeons of large experience accustomed to doing plastic and bone surgery, and to correlate with each a dental oral surgeon, thus giving to the individual case the skill and knowledge of both professions. In order to bring together the surgeons and dental oral surgeons selected to do this work, the courses in plastic and oral surgery were established to correlate the particular functions of each, to review the anatomy, the principles of plastic surgery, of splinting and the treatment of infections and sepsis of the face and jaw bones."

To quickly qualify as many officers of the Medical and Dental Corps as possible to deal with these cases, schools already in existence and located in large cities with good clinical facilities were requested to give short courses of training of this character. The courses were to be practically uniform in the several schools and of from three to four weeks duration. It never was contemplated that they should produce a group of specialists, as this was obviously impossible in the time available. Washington University Medical School, the Thomas W. Evans Museum and Dental Institute School of Dentistry, University of Pennsylvania, and Northwestern University Dental School were selected and cordially agreed to organize the suggested courses. The service in these schools was entirely voluntary on the part of the teachers who came from all the medical and dental schools located in each of the three cities, and the practitioners of both professions who were invited to participate in giving instruction. The best men in each city were sought regardless of their affiliations and, without exception, promptly responded to the call. In St. Louis twenty-eight, in Chicago forty-one, in Philadelphia forty-one surgeons and dentists constituted the teaching personnel.

Washington University gave the first course, beginning October 15, 1917. In all, ninety-two medical officers and forty-one dental officers were detailed for instruction to this school which gave four courses.

The first course in the Evans Institute, began November 5, 1917, and the third and last ended on March 9, 1918. Forty-three medical and forty-eight dental officers were in attendance during this time in groups of about thirty for each course.



Northwestern University Dental School gave two courses, the first beginning on November 19, 1917, and a total of twenty-nine medical and thirty-four dental officers were assigned to this school.

One hundred and sixty-four medical and one hundred and twenty-three dental officers thus had the instruction, a total of two hundred and eighty-seven men.

The dean of each school was in charge of the educational side of the work, while for each group of officers detailed, a military director was appointed from among them, who had supervision over all matters of a military nature.

But how were the principles of military surgery to be taught by civilian teachers in a civilian school so far removed from the actual seat of military operations, and having only available the ordinary clinical material of civil life? It was evident that these conditions imposed limitations upon the work, but it was equally evident that the general principles underlying good surgical judgment were the same in civil and military cases, that the methods of the treatment of sepsis, of immobilizing fractures and the reconstruction of faces did not differ greatly in civil and military hospitals, and that, at least, some knowledge of the technic to be employed in the field might be gained at home. Furthermore, by collecting the men in groups, it was possible to give them the benefit of the experience of those who actually had done some of the surgery of this war by furnishing selected digests of the war literature, and by illustrated lectures by those who had served overseas.

The curricula of the schools covered the same subjects, and the lectures were given to the surgeons and dentists alike, except in a few items to be noted later. The anatomy of the head and neck which was designed to be a comprehensive refresher course was taught by dissection chiefly. In all the schools the surgeons dissected these parts both superficially and deeply, covering periods of from thirty-six to forty-five hours. In some courses the dentists did the same, in others, they only were given demonstrations upon specimens. Operative surgery was arranged more especially for the surgeons, who did cartilage and bone grafting and blood transfusions upon living dogs, and plastic work and ligations upon the cadaver. The dentists witnessed many of the operations and were given a separate short course in the general principles of surgery and in surgical technic. In two schools near the end of the course, cadavers were mutilated and successive teams of a surgeon and a dentist were assigned for treatment of the case. While the surgeons were engaged in the surgical work proper, the dentists had courses in the laboratory of from twenty-two to twenty-eight hours, in which they actually constructed technic splints. Fourteen selected and approved methods of fixation were lectured upon and demonstrated to both surgeons and dentists in all the schools, and the surgeons were not only made familiar with the methods available, but actually were trained in some of the

methods of fixation with wire ligatures about the teeth to provide for the unexpected absence of the dentist. Kazanjian's classification of fractures generally was adopted as the basis of the instruction.

In dealing with infections about the face, mouth and neck, special attention was paid to trench mouth, gas gangrene and cellulitis of the neck. Wounds and injuries as far as possible were described and illustrated by those who actually had treated war injuries in France or England. In Philadelphia, in each course, six men who had seen service at the American Ambulance, at Neuilly, gave the officers the benefit of their experience in illustrated lectures. In Chicago and St. Louis also this was done as far as possible. Anesthesia did not receive extended treatment. The intratracheal method of general anesthesia and the wider applications of novocain in infiltration and conduction anesthesia were, however, fully covered. The work in roentgenology for both groups consisted in its application to the location of foreign bodies and in the diagnosis of fractures. The dentists also had special work in the diagnosis of tooth and root conditions. Both groups had some extraction.

The after treatment of cases also was extensively discussed from the standpoint of combating infection. The Dakin-Carrel and Dichloramine T technic were taught. In Philadelphia, at the Pennsylvania Hospital, the class saw Capt. W. Estell Lee and his assistants dress one hundred cases with dichloramine T in an hour. Special lectures upon various closely-related subjects were given in each school such as, "Evacuation and Transportation of the Wounded," by Major W. C. Speakman, who had been in France, "The Removal of Inspired Bodies of a Dental Nature," by Dr. Chevalier Jackson, etc.

The clinics were necessarily largely limited to the traumata of civil life and to old plastic cases. There were always some fractures and a certain number of plastic face cases. A number of seminar hours in each course were devoted to a discussion of the current literature upon the subject being taught. The bibliography of the subject as contained in current periodicals was furnished to each officer from the office of the Surgeon General. An article was assigned to an officer for each seminar at which he presented a brief abstract, so the class got the benefit of all the articles. In addition special mention should be made of the lectures on the periodical literature of "Plastic and Oral Surgery," delivered by Dr. Carl E. Black, at the Northwestern University course.

At the conclusion of the courses, each officer was rated by his teachers for the Surgeon General, and this had something to do with his assignment as it assisted the military authorities in selecting the more competent officers.

These courses were of unquestioned value to most of the men who were detailed to take them, as many have subsequently testified. They



undoubtedly gave the surgeons a clearer understanding of the importance of accurate fixation of fractured jaws so that the patient eventually would have a functionally efficient, masticating apparatus. The value of a well-constructed splint also was established. The importance of saving the teeth where they did not complicate the surgical result likewise was demonstrated. They also prepared the dentists to take better care of the fracture cases, and gave them a broader view of the surgical treatment of mouth wounds. Many of these dentists did a great deal of surgical work during their subsequent service in the army. If time had permitted it would have been better to have had the courses a little longer, but at the time they were being given it was felt that all the speed possible must be put into the work.

The civilian schools were discontinued when the instruction of the officers assigned for this branch of the service was assumed by the military school at Oglethorpe.

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### TEACHING THE PRINCIPLES OF MAXILLO-FACIAL SURGERY IN A GOVERNMENT SCHOOL

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THE AUTHOR'S EXPERIENCE in the teaching of maxillo-facial surgery in Government Military Schools has been more or less limited to conditions as he found them when ordered from the office of the Surgeon General, at Washington, to establish a school of Plastic and Oral Surgery at Fort Oglethorpe, Camp Greenleaf, Chickamauga Park, Ga., to prepare men for these positions in the hospitals, about to be ordered overseas and at the Army Medical School at Washington. The previous army schools of plastic and oral surgery organized by Lieutenant Colonel Blair with courses at St. Louis, Chicago and Philadelphia already had laid a foundation for this work. The value of the instruction given by the teachers in those courses is fully attested by the splendid work that was done in the overseas hospitals in the care of maxillo-facial cases by the teams of operators who were appointed through the Sub-section of Plastic and Oral Surgery, Head Surgery Division of the Surgeon General's office, in charge of Colonel Walter Parker.

The conditions which pertain to the organization and conduct of a school of this character having for its purpose the thoroughly practical preparation of men within the limits of a short space of time (4 weeks' course) to fit them to do a special kind of surgery under difficult conditions are very different from those governing the teaching of oral

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surgery to under-graduates, or even post-graduate instruction under ordinary circumstances.

At Camp Greenleaf the men who were assigned to this work were surgeons whom it was assumed already were skilled in general surgery. They were therefore ready for immediate cadaver operative training which was arranged to include practically all the well known plastic operative procedures. This was followed by operative work on dogs and there was at the same time lecture and quiz training on the anatomy of the operative field, the construction and application of dental splints, the diagnosis and treatment of mouth diseases, general surgical principles, eye, ear, nose, throat and nerve affections. This was made possible by the efficient cooperation of the schools of surgery, otolaryngology, ophthalmology and brain and nerve diseases and the active assistance of the officers of the dental corps.

With the ultimate end in view of securing for wounded men the best possible final results in maxillary and facial restoration, it was found to be impracticable to confine the teaching of the principles of this surgical treatment, in a Government School, within the limitations of the prescribed courses of maxillo-facial surgery alone. Urgent as the necessity might be for special trained men for this particular operative field, the call for wider dissemination of the knowledge of at least some of the vital principles that govern oral pathologic conditions among all the surgeons who might have charge of these wounded from the very front line trenches on through the succeeding hospitals, until such time as they could be placed under a specialist's care, was still more imperative. Even as the need of this preparation for war hospital work was great, so also was the opportunity of the instructors, whose task it was, first to co-ordinate the teaching resources of the army to the end that all its medical divisions might be made familiar with the important steps in early treatment that underlie the reconstructive operative results that are to follow in due time. Second, to familiarize the maxillo-facial surgeon with the methods and possibilities for good accomplishment of the right kind of dental and oral mechanical and other treatment, so that he would fully realize the important control that this work must inevitably exercise over the surgical procedures in this class of cases. It is very necessary for the surgeon to have a definite idea of just what reasonably might be expected from the efficient assistance of a dentist in order that intelligent team work may yield such benefits as neither surgeon nor dentist alone could accomplish. Therefore, it follows, it is important that in order to make team work thoroughly efficient, courses of instruction should be governed by the following considerations:

*First*, the surgeon must know what the dentist can do to improve such cases.



*Second*, the dentist should be informed as to the methods of treatment by which he may lay the best foundation for further surgical correction.

*Third*, the maxillo-facial surgeon must know thoroughly the comprehensions embodied in both the first and second considerations, and in addition also should have the necessary special training in plastic and oral surgical operations.

Conditions at Camp Greenleaf particularly were favorable for the establishment of a successful army school of plastic and oral surgery. Captain Warren B. Davis who was associated with the author in its organization and who directed its activities after his departure, formerly had been a teacher of anatomy and surgery in Jefferson Medical College, and it was this experience coupled with his untiring energy and enthusiasm that largely was responsible for the accomplishments of the school during the comparatively brief period of its existence until the signing of the armistice removed the necessity for the further continuance of any of the army emergency schools.

Colonel Bispham the Commandant gave generous assistance in providing suitable quarters and otherwise facilitating the progress of the work of organization. Lieutenant Colonel Edward Martin already had established a very successful school of general surgery on unusually efficient educational lines. It was his broad vision of teaching principles, his more than ordinarily keen appreciation, and thorough supervision of all the military courses of instruction that were given at that post which went far toward encouraging the upbuilding of these institutions to the high positions of importance which they all assumed.

Constant interchange gave the lecturers of the school of general surgery opportunity to extend their instruction to the officers in attendance at the school of plastic and oral surgery, while the instructors of this school in their turn gave lectures to the classes of the school of general surgery.

The benefits of these methods of instructional exchange to the members of both classes were beyond computation, and it is hoped that this good effect may continue to be influential for many years.

The same relations were continued with the schools of otolaryngology, under Lieutenant Colonel Harris and ophthalmology in charge of Major Wiener. Both of these schools were of the highest grade in every respect and the opportunity of the co-operative assistance of their directors was of great value to the student officers in attendance at the plastic and oral surgical courses.

The school of brain and neural surgery under Major Coleman was closely associated both by location in the same building and by the direct assistance of Major Coleman who previously had been an experienced teacher of oral surgery in civilian schools.

Lieutenant Colonel Menges, of the school of roentgenology, gave valuable instruction in oral roentgenography.

The army rooms for anatomical instruction and dog surgery at Chattanooga, under the management of Lieutenant Cook were exceedingly well organized, and an abundance of fresh cadavers suitable for plastic operative demonstrations always were ready for this purpose, as were dogs although there was no provision for the post operative care of animals. The dogs used already had been condemned by the pound master and after the demonstrations under ether anesthesia had been completed, a hypodermic of strychnin prevented their future suffering. It was therefore impracticable to follow up results, but for practice in the ligation of arteries, development of judgment as to the capabilities of flap circulation under the strain of tension after placement, and the character of pedicles required for security, in such plastic operations, living tissue was found to be indispensable and dog surgery exercises of great value when used to supplement the cadaver operative work.

Both the cadaver and dog operations were done by the men themselves under the direct supervision of Captain Davis and the author, for in this way the actual benefit was much greater than that which might be derived from witnessing demonstrations of operative methods by the instructors, moreover, it gave opportunity to test the skill and actual surgical experience of the candidates so that the possibilities of their individual adaptability for plastic operative work might be accurately graded.

All the operative procedures were worked out carefully in advance, and designed to cover as completely as possible the well established plastic operations for the repair of facial and maxillary defects as given in the text books and in illustrations of reported war cases.

The desirability of these operations or their disadvantages as might appear in given cases, and the principles that must govern operative selection were carefully studied. This was particularly true with reference to the very important principle that no plastic operation is warranted which even though it may improve the defect that it is designed to relieve, will nevertheless leave another defect that may be quite as objectionable as the original one.

Major Eby and Captain Todd, of the dental corps placed at the service of the school a unique collection of splints, plaster casts, gelatin forms and colored models prepared by themselves which covered the methods of treatment of a wide range of jaw and face defects, and these were used in illustration of lectures before both the general surgical and plastic and oral surgical students, thus giving the widest possible dissemination of knowledge of the mechanics of jaw restoration among all who might encounter such cases in future war work.



SUBJECTS OF THE LECTURES AND DEMONSTRATIONS were as follows:

*Major George V. I. Brown and Captain Warren B. Davis:* "Principles of plastic surgery," "Surgical anatomy of head and neck, with demonstrations of special dissections." "War injuries of face and jaws. Types and treatment." "Fractures of jaws. Varieties of splints most applicable." "Bone grafts and cartilage transplants." "Injuries of the tongue and floor of the mouth." "Complications following mouth and jaw injuries." "Tumors of the jaw." "Nasal deformities." "Injuries of salivary glands and ducts." "Mouth infections. Necrosis of jaw." "Ankylosis of jaw." "Anesthesia for Plastic and Oral Surgical work."

*Captain Lyman A. Brewer:* "Post-operative treatment of Plastic and Oral Surgical cases." Actinomycosis. Glanders. Tuberculosis of maxilla and of mandible." "Review quizzes."

*Captain Chauncey M. Rakestraw:* "Weekly reviews of practical points," "Hemorrhage and shock," "Local anesthesia," "Skin grafting," "Burns and scalds," "Wounds and contusions."

*Captain James H. Dyer:* "Anatomic reviews and quizzes," "Focal infections of oral origin."

#### LECTURES AND DEMONSTRATIONS BY THE DIRECTORS AND INSTRUCTORS OF THE SCHOOL OF MILITARY SURGERY

*Lieutenant Colonel Martin:* "Trauma," "Hand and skin sterilization," "Technic of cleanliness."

*Captain Lee:* "Dichloramine-T technic," "Carrel-Dakin technic," "Trauma of skin and underlying soft parts."

*Captain Furness:* "Surgical dressings of wounds," "Bacteriological control of wounds," "Dressings for contaminated fractures."

*Lieutenant Heise:* "Blood typing and blood transfusion."

*The School of Military Medicine—Lieutenant Colonel Foster:* "Acidosis," "Renal function in its relation to surgery."

*The School of Neuro Surgery—Major Coleman:* "Nerve trauma," "Nerve repair," "Surgical neuralgia of fifth nerve," "Increased intracranial pressure."

*The School of Roentgenology—Lieutenant Colonel Menges:* "X-ray in its relation to plastic and oral surgery."

*The School of Otolaryngology—Lieutenant Colonel Harris:* "Infections of the sinus maxillaris of traumatic origin."

*The School of Ophthalmology—Major Wiener:* "Emergency treatment of eye injuries," "Plastic operations on eyelids and orbit."

*The School of Dental Surgery—Major Eby:* "Dental appliances used in treatment of jaw fractures," "Prosthetic appliances used in maintaining contour of face during period of reconstruction."

## LECTURES

Given by Major Geo. V. I. Brown and Captain Warren B. Davis, of the school of plastic and oral surgery, to classes in other schools at Camp Greenleaf, Chickamauga Park, Ga.

*The School of Military Surgery:* "Principles of Plastic Surgery," "Surgical anatomy of the face and jaws."

*The School of Neuro Surgery:* "Embryology and later development of the bones of the face," "Superficial anatomy of head and neck," "Internal anatomy of the face."

*The School of Ophthalmology:* "Plastic surgery of the face in its relation to ophthalmology," "Development and anatomy of the nasal accessory sinuses and their relations to the orbit."

*The School of Otolaryngology:* "Embryology and post-natal development of the nasal accessory sinuses."

The war emergency army medical schools have passed into history, the need for their continuance having ended with the signing of the armistice, but no one who saw the character of work done in these institutions, notwithstanding the hurried and confused conditions under which they were organized, could fail to be impressed with the infinite possibilities for good accomplishment that might obtain, if a combination of civilian and regular army teachers could be allowed to continue to give medical and surgical instruction to civilian and army doctors with all the resources of the government and its army educational advantages behind them.

We who were associated in the school of plastic and oral surgery indulged a feeling which was almost akin to hope, that the work that was being done by the army emergency medical schools might in some form or other be permitted to live on and to continue to exert perhaps an even greater usefulness long after the war might be finished. The dream no doubt was visualized in some form or other by all those who took part in the organization and conduct of each of the army emergency medical schools, that perhaps at some future time arrangements might be made whereby members of the Medical Officers' Reserve Corps might be permitted to enjoy each year a short period of active duty during which they might attend the special schools of instruction in which their greatest interests were centered, and that these might be conducted in rotation by the great leaders of medicine and surgery, whether civilian or of the regular army so that the privilege of membership in the Medical Officers' Reserve Corps might be prized more highly for this reason. Opportunities for special study would thus be offered which could not be enjoyed in equal measure under any other circumstances or in any other part of the world. The great work that has been done and is being done by those in charge of the Army Medical Museum in the preparation of many forms of illustrative material suitable for instruction and covering a wide range of conditions, presents unlimited educational advantages,



and the records of this war as now being compiled under orders from the Surgeon General, when they finally have been completed for all the divisions in medicine, surgery and sanitation, if placed at the disposal of the men who helped to make all this possible would in the highest degree be beneficial in raising the standards of education and practice for all future time. Such opportunities would be a just reward for the unselfish sacrifices of members of the medical profession in army service.

### THE MAXILLO-FACIAL SURGEON IN THE FRONT LINE HOSPITAL\*

BY REA P. MCGEE, M.D., D.D.S. DENVER, COLO.

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**I**T WAS MY GOOD FORTUNE to be detailed as maxillo-facial surgeon to U. S. Mobile Hospital No. 1, A. E. F., and it is from the experience gained there that I speak.

When roads are congested with hundreds of thousands of moving troops with all the impedimenta of war, the matter of the weight and the bulk of the equipment for those who operate on wounded men must be carefully considered. Only those things which are absolutely necessary can be carried. The typical front line operating organization is a mobile hospital. The dressing stations and field hospitals are crowded with the work that they are expected to do, which is essentially emergency treatment. There are many patients who might have a chance to recover if they could have specialists to operate on them at once. Many classes of wounds occur that emergency units are unable to handle. The element of time and transportation is a very important factor. Men that could be saved if they could be operated on within a few hours of the receipt of the injury, and many others who are in such a condition that they cannot survive the trip back to the evacuation hospital, can be successfully taken care of in the mobile units. For these reasons the mobile hospitals were developed.

The equipment furnished by the government for the front line work in this department was well planned, but the insurmountable difficulties in procuring especially-designed instruments at the beginning of the war defeated the fulfillment of the plans. There was only one remedy: that of the surgeon's taking his own equipment. That is what I did, and I believe it is the satisfactory solution for all specialists in any war in any army.

For plastic surgery a very complete assortment of needles, Hagedorn half curved and full curved, with cutting points, both large and small, is required. Small, sharp-pointed gynecologic needles are also required.

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One complete set of cleft-palate instruments, with appropriate mouth gags, at least three good tongue forceps; an assortment of hemostats, particularly small, sharp-pointed ones; several needle holders of varying shapes; one full set of extracting forceps; an assortment of elevators; two rongeurs; one small dental hand drill; wire working pliers; orthodontic wire; modeling compound; a set of knives; a sharpening stone of carborundum, mouth retractors, and a tracheotomy set can all be easily carried and, if carefully selected, will supplement the instruments found in the ordinary hospital equipment.

#### NATURE OF WOUNDS

Mobile Hospital No. 1 was always in the area between the 75's and the 6-inch guns. Our advanced position made it possible for us to receive many patients as early as two hours after they were hit. These patients were first carried to the front line dressing station, then by ambulance, to the triage, and from the triage to us. Only nontransportable patients with battle casualties were taken by No. 1. This meant that we received the most desperately wounded men. Nearly all our patients were suffering more or less from shock. Many were in a state of coma. In nearly all cases of shock in which there was a fracture of the mandible, the patient came out of the condition of shock as soon as the jaw was set, because, in these cases, shock usually is due to obstructed respiration.

As these patients came in they were placed in the receiving ward and, according to the nature of their wounds, assigned to the different services. They usually were covered with blood and dirt, almost invariably suffering from extreme exhaustion, and many, particularly those with wounds in the head, face and neck, were suffering from labored respiration.

As soon as possible after their arrival, they were taken to the roentgen-ray department and examined with the fluoroscope for foreign bodies. It was impossible for us to carry a photographic roentgen-ray outfit, and consequently we depended for localization on indelible pencil marks made on the surface of the body.

When the patient came to the operating table, the face usually was matted with blood and powder, and it was very difficult to get him into the proper condition. We overcame this difficulty by using gasoline to wash the face, and after that shaving as smooth as possible. Frequently it was necessary to have the anesthetic given before the slightest attempt could be made to clear up the face.

#### TREATMENT

The first things to consider are the depth of the wound, the shape of the wound, and whether or not there is a loss of tissue. Not to exceed 1 per cent. of the patients have a considerable loss of tissue other than that in the direct course of the missile. This applies to wounds of the soft tissues and not to bone injuries. Bone injuries in the maxillary region were most severe when caused by high explosives. The Germans



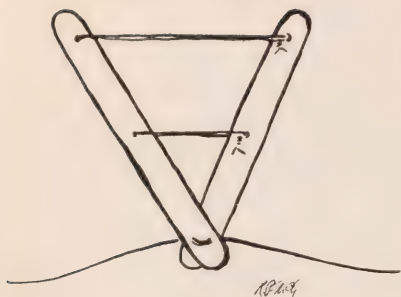


Fig. 1

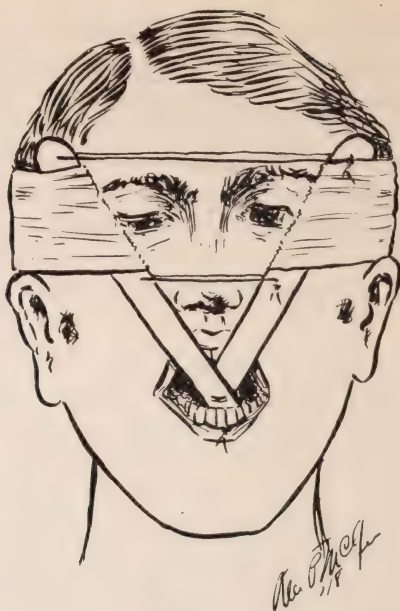


Fig. 2

Fig. 1.—Emergency splint to permit breathing when the patient is lying down.

Fig. 2.—Emergency splint applied, jaw thrown forward and mouth held open.

did not use true shrapnel. All injuries marked as shrapnel wounds were really high explosive wounds.

In my clinic at Mobile Hospital No. 1, I had only one case of bayonet wound of the face. We found many men wounded with the bayonet in the front line area, but they were all dead.

The control of hemorrhage in these fresh wounds is not so difficult as the control of hemorrhage later in older wounds. We were bothered very little with secondary hemorrhage, largely because the mouths of the American soldiers are the cleanest and healthiest of those of any soldiers in the world. Much of the secondary hemorrhage that was encountered in the British army was due to the tremendous percentage of oral infection among its soldiers. Fortunately for us, the American habit of taking care of the mouth and teeth and the service of the Dental Corps in the army renders septic mouths a rarity rather than a rule.

Cases in which the parotid gland and Stenson's duct were injured presented the possibility of salivary fistula, and my plan in handling them was always to gather up the exposed portion of the duct or gland with sutures, carry the sutures inside the mouth and fix them there, and then close the face wound immediately so that the fistula, when established, would follow the suture line and open into the mouth instead of on the face. It makes very little difference what portion of the buccal cavity the parotid gland discharges into, and if any change was desired

later it was very easily effected; but a well-established fistula on the surface of the face is an extremely difficult thing to handle.

When it was possible tracheotomy was avoided; but in some cases, before, during or after the operation, it was necessary to increase the air supply of the lungs, and a number of tracheotomies were performed. In those cases in which the patients were tubed immediately on their receipt at the hospital, I always had the ether given through the tracheotomy tube. This is a very convenient method of etherization for operation on the face and mouth, and should be taken advantage of when intubation is necessary.

#### REPORT OF CASES

##### CASES IN WHICH RESPIRATION WAS IMMEDIATELY IMPROVED BY EARLY SPLINTING

CASE 1.—J. C. received a gunshot wound in the arm and the face. The bullet traversed the right upper arm, caused a large, superficial wound of the neck, and destroyed the body of the mandible from the cuspid to the second molar on the right side. The patient suffered from shock and labored respiration. Preoperative shock treatment

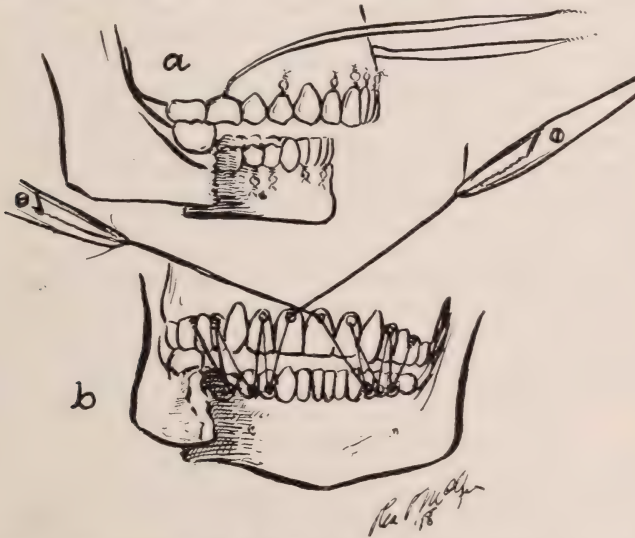


Fig. 3.—Wire splint: *a*, method of forming wire loops on the necks of the teeth to serve as pulleys; *b*, wire threaded through the loops.

failed to get the patient in condition to receive an anesthetic. The neck wound was cleansed; loose bone fragments were removed; the jaw was set, and a wire splint was applied. The respiration immediately improved, and the patient was soon out of shock. No anesthetic was used. September 13, 1918, three sequestrums were removed. September 16, the patient was evacuated in good condition.

CASE 2.—E. C. was wounded Sept. 27, 1918, at 4 p. m., admitted September 28 at 3:40 p. m. and operated on September 28, at 7 p. m. A high explosive shell fragment struck under the chin in the left center, ranged upward, and fractured the mandible in the median line. The upper lip was splinted, the jaw wired, and the fracture reduced. The patient was not in condition for an anesthetic. September 30, he was much improved; the wound in the chin was opened, the bone curetted, the lip repaired and a drain inserted,



CASE 3.—E. A. was wounded Oct. 10, 1918, at 3 p. m., admitted October 11 at 3:30 a. m. and operated on October 11, at 6 a. m. He had a gunshot wound of the face and right arm. The foreign body was removed. There was a compound comminuted fracture of the body of the mandible on the right side. The respiration was blocked by the dropping of a large fragment. The jaw was set with a wire splint, and the respiration became normal.

CASE 4.—J. R. was wounded Oct. 30, 1918, at 10 a. m., admitted the same day at 4:20 p. m. and operated on at 7 p. m. He had a gunshot wound of the face and jaw. Use of the roentgen ray revealed a foreign body, 12 by 15 mm., internal to the angle of the jaw, on the left side. The jaw was fractured anterior to the condyle on that side. Respiration was very bad. A high explosive fragment had entered the left angle of the jaw, F. C. C. angle. The pharynx was penetrated at the upper margin of the larynx. A foreign body, 25 by 25 mm., had dropped under the epiglottis. It was removed through the mouth. The respiration became normal. The bone fragments were removed; rubber tube drainage was used, and a wire splint was applied.

CASE 5.—E. M. was wounded Oct. 21, 1918, at 3:30 p. m., admitted October 22 at 6:15 a. m. and operated on the same morning at 11 a. m. A compound comminuted fracture of the mandible extended from the left second molar to the right ramus. The wound was perforating, the foreign body had entered the left cheek over the right first molar region and traversed the mouth, with its point of exit in the right cheek. The mandible was broken into three segments, with considerable loss of tissue. The respiration was very bad. Bone fragments were removed, and three wounds in the face were sutured. The left posterior fragments of the mandible were wired to the upper teeth; two subcutaneous, silver wire sutures were passed around the middle segment and swung from a transverse wire stretched from cuspid to above, and a subcutaneous, silver wire suture was passed around the right posterior segment and attached by a loop to the upper first molar. Through and through rubber tube drainage was used. The respiration became normal.

CASE 6.—P. B. was wounded Nov. 2, 1918, at 2 p. m., admitted the next day at 12:30 a. m. and operated on the same morning at 2 a. m. He had a gunshot wound of the mouth and the neck. The roentgen-ray finding was negative. A machine gun bullet had entered the back of the neck, to the right of the center, and at the level of the chin; had traversed the neck, the pharynx and the floor of the mouth, and had destroyed bone and teeth from the left central to the right bicuspid, removing bone to within one-half inch of the lower margin of the mandible. There was a severe, hemorrhagic edema of the sublingual glands, driving the tongue backward toward the pharynx. The patient could breathe only when leaning forward, and then with difficulty. The lower lip was cut open from the center to the left mental foramen. The sublingual glands were drained, and a wire suture was placed through the incisions to keep the drainage open. A stab wound was made and a rubber tube drain inserted under the chin; the bone fragments were removed, the lip repaired and tension sutures employed.

Since returning to the United States I have seen this patient; he had fully recovered, with no further operative interference.

#### EXAMPLES OF CASES IN WHICH THE EMERGENCY LEVER SPLINT WAS USED

CASE 7.—W. S., wounded, the time unknown, was admitted Sept. 28, 1918, at 4:35 a. m. and operated on the same morning at 11 o'clock. The patient was semiconscious with a penetrating, rifle ball wound. The ball (fired by a sniper) had passed through both parotid glands and shattered the ramus on each side. There was great edema of the soft palate, which had been traversed. Dropping of the anterior segment interfered with respiration, and closure of the jaws caused suffocation. It was impossible to give an anesthetic. The condition of the patient became very bad while he was on the table, and I held the epiglottis open for twenty minutes to keep him alive. The wounds of entrance and exit were curetted, a rubber tube drain inserted, and the jaw braced forward and upward with an emergency lever splint. The respiration soon became normal, and the

patient regained consciousness. The lever splint was removed in four days, and the jaw was set with a wire splint. The patient was in good condition when evacuated.

CASE 8.—M. S. was wounded ten hours before the operation, performed Oct. 14, 1918. The roentgen-ray finding was negative. The patient had a penetrating gunshot wound, perforating the ramus on each side. The soft palate had been traversed and was edematous. There was a compound comminuted fracture of the ramus on each side. The parotid glands were pierced and the respiration difficult. A temporary lever splint was applied, with no anesthetic, and the respiration improved. October 16, the lever splint was removed and the edema of the palate was found to be reduced. A Blair splint with wire anchorage was applied.

CASE 9.—C. H. was wounded Oct. 14, 1918, at 8 a. m., admitted October 15, at 6:45 a. m. and operated on the same morning at 8 o'clock. The roentgen rays revealed a foreign body 8 by 10 mm. under the upper third of the left ramus. There was a compound comminuted fracture of the ramus on the left side, and one of the body of the mandible on the right. The foreign body entered the right cheek, passed through the palate and lodged on the inner surface of the left ramus. Edema of the palate was so great that the mouth could not be closed, and the drop of the fractured mandible prevented normal respiration. An emergency lever splint was applied. The respiration immediately improved, and the patient was able to breathe lying down, for the first time since the receipt of the injury. October 16, the lever splint was removed, and the edema of the palate was found somewhat improved. A Blair splint was applied, and breathing stopped. The lever splint was replaced, and the respiration became normal. October 18, a local anesthetic was given. I removed a rifle ball from the inner surface of the mandible, evacuated pus, inserted a drain and applied a Blair splint with a wire anchorage. The condition of the patient is good.

#### BAYONET WOUND IN THE FACE

CASE 10.—V. E. was wounded Sept. 26, 1918, admitted the next day at 6:45 a. m. and operated on that evening at 7 o'clock. The patient had a bayonet wound in the right cheek which had opened the antrum and fractured the alveolar process of the maxilla from the third molar (left) to the second bicuspid (right), with comminution between cuspids and bicuspids on each side. The roof of the mouth had been broken through into the nose and the antrum. There was a stellate wound of the face. The injury was cleansed and the wound sutured. A drain was inserted, a modeling compound splint with wire reinforcements on the upper teeth was applied, and a chin cup used. The patient was evacuated on the third day.

#### CASE OF EXPOSED PAROTID GLAND

CASE 11.—S. M. was wounded Sept. 29, 1918, at 7 a. m., admitted September 30 at 6:55 p. m. and operated on that night at 10 o'clock. The roentgen-ray finding was negative. A gunshot wound had perforated face and fractured, on each side, the body of the mandible, with a loss of tissue in the molar and the bicuspid region. The upper molars and the second bicuspid were shattered. The tongue was more than two thirds severed. The wound in the left cheek measured 3 by 3 inches. The parotid gland was exposed in the wound, and the capsule ruptured. Breathing was difficult. The tongue was repaired, the mucosa of the cheek stitched, the exposed parotid gland caught with a suture and carried through the mucous membrane, and a ligature passed through the mouth and back over the ear. Primary sutures in the face wound and tension sutures with buttons were placed. The condition of the patient required rest before further operation could be attempted. At a second operation, performed October 1, edema of the glottis and the larynx was relieved, and a low tracheotomy was performed. In a third operation, performed October 3, the jaws were wired and the tube cleaned. The patient is in good condition.

#### DESTRUCTION OF ONE-HALF THE MAXILLA

CASE 12.—C. O. was wounded Oct. 11, 1918, at 7 a. m., admitted October 15 at 1 p. m. and operated on the same day, at 4 p. m. A high explosive shell fragment had torn



the right side of the face entirely open and caused a compound comminuted fracture of the upper jaw, complete up to the floor of the orbit. The right half of the maxilla was destroyed, and the palate was destroyed except for a few fragments of bone and soft tissue. The left cheek was without support, owing to the displacement of the remaining fragment of maxilla to the right. The base of the nose was torn away, and the wound was septic. The patient was unconscious. No injury had been done the mandible. I replaced the fragment of maxilla, repaired the palate, as far as possible, by closure of the remaining mucous membrane and repaired the mucosa of the mouth. Tissues of the upper lip, face and nose were returned to place and sutured. Button tension sutures were used. A Blair splint was applied and anchored by tension wires from the lower teeth to the head bandage. A modeling compound splint was placed in the nose. Respiration stopped on the table, and I performed a high tracheotomy with good results. A gunshot wound of the outer canthus of the left eye was not operated on because of the condition of the patient.

#### CASE REQUIRING MODELING COMPOUND SPLINT IN AREA OF LOST BONE TISSUE

CASE 13.—H. M. was wounded Oct. 11, 1918, at 11:30 p. m., admitted October 12 at 3:30 a. m. and operated on, that day, at 3 p. m. The injury was a gunshot wound of the chin and a compound comminuted fracture of the mandible. All the bone was gone from the second bicuspid right to the second bicuspid left. The lower lip was detached and hanging by a pedicle from the left side. The bridge of the nose had been shot out. The segments of the mandible were wired into position. Wires were suspended from bicuspid to bicuspid, and a modeling compound splint approximating the shape of the missing bone was attached to support the soft tissues of the reconstructed chin. The chin and the lower lip were repaired. A modeling compound splint was placed on the nose to prevent the turning up of the tip from cicatricial contraction. Button tension sutures were used, and a cigaret drain. The patient was two and one-half hours under gas-ogygen analgesia.

#### SPINAL ACCESSORY NERVE INVOLVEMENT

CASE 14.—M. B. was wounded Oct. 12, 1918, at 10:30 a. m., admitted the same day at 2 p. m. and operated on that night at 11:45. Roentgenoscopy revealed a foreign body, 10 by 12 mm., under the mark on the right side of the nose. It was apparently against the body of the third cervical vertebra. The patient had a gunshot wound of the face; a high explosive fragment had entered the cheek opposite the right first molar, and had ranged inward and backward, fracturing the mandible at the angle on the right side and severing the mandibular artery. The muscles of the pharynx were penetrated. The foreign body was found against the body of the third cervical vertebra. It was removed through the wound of entry, without opening into the buccal cavity. The face wound was stitched and the jaws wired. Immediately on receipt of the wound, voluntary motion in the arms and the legs ceased; the patient was semiconscious. After the operation, the left arm and both legs gradually approached normal. On the second day the patient was fully conscious. The right arm had normal sensation but no motion. The patient could close the right hand and had a slight motion in the wrist. He was evacuated.

#### METHODS IN DIFFERENT TYPES OF WOUNDS

We had several cases of double fractures of the ramus near the condyles, with the soft palate traversed. In all these instances the men had been shot by Boche snipers. In this type of injury the jaw drops downward and backward and seriously interferes with respiration. If the jaw is set with the mouth closed, the swelling of the soft palate will completely stop respiration. It is necessary to splint the mandible with the mouth open, but with the jaw very considerably thrown forward, to

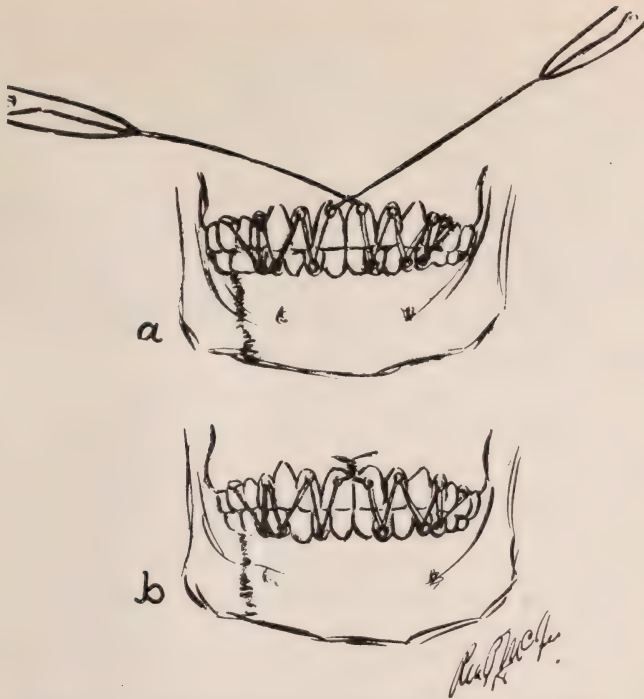


Fig. 4.—*a*, traction on the wires drawing the fractured jaw into place; *b*, fracture secured in position.

allow the patient to lie down and yet breathe. This was done with a very simple emergency splint of my own invention, made from wooden tongue depressors and orthodontic wire. All patients with this type of injury will die unless treated early. They invariably come in in a sitting position, leaning forward, breathing with the greatest difficulty, and extremely apprehensive. Those who become unconscious are usually brought in dead, because breathing requires the greatest exertion on the part of the patient. The emergency splint, in every case, allowed the patient to lie down and breathe in the ordinary position. He was fed with a rubber tube on a feeder through the forks of the splint. The levers were usually left in place for three days and then removed, whereupon the jaw was closed with the wire splint that I used as a routine.

In fractures of the maxilla, complete or partial, whether or not complicated with fracture of the mandible, the early treatment is employment of the open-bite splint, such as is furnished by the United States government, or the Kingsley type of splint used by the New Zealand troops. The Kingsley type I believe to be the most efficient. In all cases, chin bandages of whatever type are extremely unsatisfactory.

Union in fractures of the maxilla usually occurs much more promptly than union of the mandible; but when we do not get a prompt result, it is much more difficult to treat an united fracture of the maxilla.



In all cases of traumatic cleft of the hard or the soft palate, the injury is repaired at once. It is desirable to avoid circumferential wiring or bone sutures whenever a good result can be obtained without them.

Abscessed teeth or teeth that were actually loosened in the line of fracture always were removed.

It is seldom necessary to make incisions in the facial tissues in jaw cases, the wound of entry and the natural opening of the mouth furnishing sufficient access and drainage. Stab wounds under the margin of the maxilla are frequently necessary for drainage. Rubber tubes always are anchored in the drainage area with sutures. Every fractured jaw must be drained at the point of the fracture.

#### USE OF THE WIRE SPLINT

The wire splint used in my service was made from the ordinary orthodontic wire. Short wires were placed about the necks of selected teeth. These wires were turned with a loop about one-eighth inch in diameter, so that it would act as a ring pulley on each tooth. Two full length wires were used, usually anchored to the upper first molar, if present, and if not, to some similarly strong point of vantage. These wires, being doubled, were then worked through the alternate rings on the other teeth, first, below; then, above; then, below; then, above. After these wires had been placed, the ends grasped with a hemostat, and gentle traction was made outward, which invariably swung the jaw into its correct position, with practically no pain to the patient, and no necessity of manipulation with the hands, no shoving or pushing or pressing to get the fragments disengaged. The wires were then twisted in the median line, so that the jaws were firmly held together.

The great advantage in this type of temporary splint is its ease of application, the ability to apply it without a general anesthetic, and the practically painless setting of the fracture. When an anesthetic must be administered, either for face complications or for wounds of other parts of the body, the jaws should not be splinted with the teeth in occlusion until all danger of emesis has passed. In these cases I always placed the wires ready for splinting, and then, two hours after the patient had recovered from the anesthetic, I drew the wires up to close the jaws. In this way all danger was avoided, and time was saved.

Another advantage of this type of splint is that if it becomes necessary to open the jaws quickly, it can always be done with one cut from a pair of scissors. The old type of wire splint, in which two alternate teeth were wired together, made it almost impossible to open the jaws, and, when they had been opened, the entire splinting process had to be repeated; but with the type of splint which I devised, it is simply necessary to twist another length of wire on the end of the cut wire, thread it through the loops, and again close the jaws by traction.

## PRINCIPLES OF TREATMENT

Fractures of the jaw in war surgery are almost always complicated by wounds of the face. The jaw should first be splinted, or, at least, temporary splint wire should be placed and followed by repair of the facial wound.

Gas gangrene does not occur in the region of the face; consequently, debridement is contraindicated.

All live tissues and all bruised tissues that have sufficient vitality to recover must be preserved, and the rich blood supply of the face makes it possible for many bruised areas to regain their circulation.

The contraction of the muscles of expression draw the lacerated tissues from the normal positions, and the greatest care must be used to make the correct approximation. Actual loss of tissue sufficient to require flap transfer is comparatively rare. The extensive loss of facial tissue from gunshot injury, so often seen in base hospitals, is more frequently due to shrinkage and adhesions of flesh fragments than to the actual loss from the primary wound.

The routine work was to bring together the mucous membrane before the cutaneous surface was sutured. Tension sutures were used in all extensive injuries to support the approximating sutures and avoid scars and displacement.

When the nose is injured, it should be repaired at once, if possible; and if the injury has resulted in a loss of bone structure, a modeling-compound splint should be used to prevent cicatricial displacement.

Patients with the jaw splinted in either the open or the closed position, require liquid diet through a rubber tube attached to the ordinary hospital feeder. Many times the soldiers with their mouths splinted were unable to smoke. This was overcome by placing a glass of water or cup of coffee or cup of chocolate where they could reach it, and by wetting their lips with their fingers they were able to smoke so long as the moisture remained. The process was repeated as often as necessary so long as they wanted to smoke. This gave them a great deal of comfort. It was also possible, in cases in which the lower jaw was fixed or missing, for the patient to hold one nostril closed, and, by moistening the other nostril and putting the cigarette in it, he could smoke very nicely.

The mouth should be cleansed hourly with a warm salt solution. The five per cent. eusol solution used by the British is very effective in these cases. A compressed air spray is important.

Wounds on the surface of the face should have as little dressing as possible.

Wounds of the tongue were numerous. Bone fragments, teeth and bullets were commonly driven into and sometimes through the tongue. In one case the tongue was more than two-thirds severed in the region of the molar teeth. These injuries are not difficult to repair with proper instruments, and in no case was there failure of union.



Local anesthesia with procain was used frequently. This was a saving of time and was satisfactory. One of our greatest difficulties, with our very limited equipment, was to cleanse properly the wounded mouth. This work was carried on as best we could, and our patients were evacuated in good condition; but as Mobile Hospital No. 1 was an essentially front line organization, moving as many as fourteen times during the period of hostilities, our evacuation arrangements were very frequently interfered with, so that patients would have to be taken on motor trucks, ambulances or narrow-gage railways, or in any way that it was possible to get them out and get them back. We were in no position to retain them after the period of danger from their wounds had passed. During the campaign, Mobile Hospital No. 1, with a bed capacity of 200, performed in all 6,048 major operations. From this you will see that we did not keep our patients for any great length of time; and owing to the impossibility of arranging proper care for mouth cases during the evacuation, patients with these injuries usually arrived with very considerable sepsis, which they did not have when they left us.

The great points to be observed in the front line work are the conservation of bone, mucous membrane and skin. Drainage must be carried to the extreme. All bone fragments that have live periosteum must be retained. One of the difficulties of this special branch of surgery, as with all others in military service, is the lack of complete understanding of the possibilities and the limitations in front line work as compared with that of the base.

I would suggest that all maxillo-facial surgeons be required to be graduates both in medicine and in dentistry; or, in lieu of this, that a maxillo-facial surgeon be given a course of training in oral surgery in a dental college, and that a dental maxillo-facial surgeon be given a course in general surgery in a medical college. This work absolutely demands both a surgical and a dental training, combined with as much artistic ability as possible.

The conditions for maxillo-facial work at Mobile Hospital No. 1 were extremely favorable, because we moved so frequently that we were not hampered with orders, and usually failed to receive detailed instructions until long after their period of usefulness had passed. The commanding officer, Col. Donald Macrae, Jr., gave every support to this department. This was of immense importance, because the specialist in a comparatively new department of war surgery encounters many difficulties that will not occur when a precedent has been established; and, in this particular instance, the precedent was not only the establishment of the specialty of the surgery of the face and jaws, but also the unusual arrangement of placing a dental officer in charge of a surgical department, to handle all cases of the maxillo-facial type. Those who follow us in the next war should have comparatively little difficulty in beginning where we leave off.

## THE EXPERIENCE OF A DENTAL SURGEON IN A BASE HOSPITAL IN THE ADVANCED SECTION\*

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**I**N REVIEWING MY EXPERIENCES as a dental surgeon in a base hospital in the Advance Section, I am quite sure that they were similar to those of the other men in base hospitals, either in the advanced section or the service of supplies.

In organizing our department it was quite simple to formulate a working plan in order to carry on the work with some degree of efficiency but to put that plan into execution was a different problem. Up to the time I was assigned to No. 15, the dental department had allotted to it a very few beds, due to the fact that the hospital was acting as an evacuation base and none of the cases could be retained long enough to do work, except of a temporary nature.

I found that we lacked everything except patients, and they were coming to us at very frequent intervals. After taking the situation up with our dental chief with reference to getting dental equipment, mechanics and supplies to use in our department, I found that practically every other hospital had the same proposition to contend with, so I just appropriated parts of several field equipments and the Red Cross came to our aid with regards to the supply problem, the only thing that we were unable to secure at that time was mechanics.

At the end of September, we had filled practically all of our available bed space. At this time we were not evacuating cases as quickly as they had in the past, due to the efforts of Colonel Blair in securing permission for the cases to be held for a longer period than was permitted previous to that time, giving us a better chance to do work of a more finished type, no case being evacuated until it had been splinted and the infection cleaned up. Because of the number of cases that were coming back to us at the time the armistice was signed, it was decided to turn over several additional wards to the maxillo-facial department.

When our department finally was organized it consisted of a surgeon-in-charge, a dentist, a surgery, dental infirmary, five general wards of eighteen beds each, with the nursing corps. In this manner all maxillo-facial cases admitted were segregated in those wards, not only giving us complete control over them, but also simplifying our work to a marked degree.

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\*Read June, 1919, before the Section on Stomatology, A. M. A., of which THE DENTAL SUMMARY is the representative organ for the dental profession by special arrangement.



After November first, we had practically all of our work well in hand, and with the addition a few days later of mechanics we were able to have our cases, as a general rule, operated on and splinted within seven days after their entrance, except in a few instances where the condition of the patient did not permit the early interference of that class of work. It was our experience that the sooner those cases were splinted the sooner would be their ultimate recovery. There is no doubt that the foregoing plan was the ideal one, but in view of the fact that at the start we lacked supplies as well as mechanics for the carrying on of the work, and the patients were coming to us so fast that it was some time before we could catch up with the work that previously had come to us. I think that had it been necessary for us to have gone on with our work, that in the greater number of cases we could have carried out the above plan quite easily.

All of our cases were received by hospital train direct from the mobile and evacuation hospitals except a few that came to us by ambulance or from the French hospitals. I wish to say that after the department had been organized and dental surgeons were assigned to the various mobile and evacuation hospitals that all of the cases came back to us in an excellent condition. The patients showed a marked improvement over those that came to us before dentists had been assigned to the advanced hospitals. Even though their work was of a temporary nature, the innumerable appliances they used in retaining the injured parts in a position of rest, and the retaining of the fragments in their normal alignment, certainly proved their worth. All of the primary plastics were of a high class and a very low percentage of them completely broken down.

The cases we received were quite variable, not only because of the extent of their wounds, but also the length of time they had been wounded. As a general rule their injuries were not over a week old, although I know of a few cases that were over four weeks old, and one of six months.

Naturally the cases on entrance were not in the best of condition, due to the forced lack of care while enroute to the hospital. Immediately upon receiving the patient, his wounds were redressed, irrigations instituted, and at the same time his injuries were charted and the position for X-rays given. By getting all the data possible on our first round we were able to determine to a degree the patients' future treatment, also giving him the benefit of an early operation, if it was considered necessary. I might add that the X-ray laboratory used the same method that was used by the Sidcup hospital in England, and brought to No. 15 by Major Dorrance. Our X-rays were of a very high class, there probably was none better in the A. E. F. The department was very liberal with us which simplified our work to a marked degree.

In taking up the treatment and care of fractures of the mandible and wounds of the face, our first consideration was free and adequate



FIG. 1

Fig. 1—Case of compound comminuted fracture of mandible with extensive loss of substance, treated by splinting to hold fragments in proper relation to upper jaw. Patient was injured Sept. 30, 1918, and was returned to the United States, with splint in position, Dec. 14, 1918. Since his return a bone graft has been made with good result.



FIG. 2

Fig. 2—Case of compound comminuted fracture of mandible at angle, in which primary wiring was done, but wire was removed on account of infection and necrosis. An open-bite splint was applied and patient made a good recovery. Patient was injured Oct. 11, 1918, and was returned to the United States Dec. 27, 1918.



drainage in every case, next the removal of all foreign bodies possible; our first plan was to remove only those that were a source of infection, at the time, but we soon found that practically all foreign bodies were sources of infections manifesting themselves some weeks later. All teeth in the line of fracture, broken-down roots and pieces of teeth were removed, except those teeth in a segment in which there would be danger of dislodging a fragment of live bone or those teeth necessary to serve as an anchorage for a splint. After some union had taken place the teeth could be extracted with no danger to the patient in the way of a permanent injury. Our next consideration was the readjustment of the injured parts, all pieces of bone were restored to as near their normal contour as possible, although the general contour of the bone was considered rather than the individual fragment. All live pieces of bone were saved and in case of some doubt as to the advisability of removing small fragments, they were left until a later date and then a curettage performed if it was found that they finally had necrosed. No debridements of the head and face were done, although I have seen articles since my return to the States in which it was stated that debridement of all tissues, in the path of the missile, was done. We had only one case come to us in which that plan had been carried out.

We preferred general anesthetics for practically all of our operations. Our work was simplified to a greater degree, because of the perfect control over the patient, with complete relaxation, especially in those cases of pronounced trismus. It is claimed by many that it is not a good practice because of the large percentage of pneumonias resulting. Personally, I am of the opinion that if proper care can be given the patient before and after the operation, and the infections are controlled, that the percentage of pneumonia will not be high. Of the number cared for at No. 15, there was not one case that developed pneumonia. No doubt conductive anesthesia has quite an application in this work but I do not believe that it was applicable in a greater percentage of the primary operations.

We did not have the marked success in the treatment of wounds of the face with Dakin's solution that has been claimed for it in other parts of the body, but we did get good results with its use on the general surgical cases, while with the use of Dichloramine-T, when we could secure the fresh solution, our results were quite satisfactory.

For irrigations we used a two-gallon glass jar with a long rubber tube and a glass nozzle attached, hung at the head of each patient's bed. The acute cases were irrigated every half hour with a solution of normal saline, while the more advanced cases received their irrigations every hour. The frequent irrigations proved, without a doubt, that they were a necessary adjunct in cleaning up the infections which naturally attend those cases.

The diet problem was quite a serious one with us. Eggs and milk form the basis of all diets for that class of injuries. It was almost impossible to secure either of those ingredients. The Red Cross purchased a few eggs each day for us but there were only enough to give to our more serious cases. The men did not go hungry, but I am sure that they would have progressed much faster had we been able to give them the proper diets. For the more acute cases liquid diets were given every two hours during the day and every four hours at night. A special table was maintained for the advanced cases and they were given minced foods, in addition to their liquid diets. The men were urged to get as much fresh air as possible as that proved an important factor in the treatment of those cases. The patients were weighed each week and the greater percentage showed a small gain each time weighed.

The plan we endeavored to carry out in the splinting of fractures was the selection of as few types of splints as possible and using them where indicated, although after the armistice was signed we were forced to use the open-bite splint in a greater number of our cases in view of the fact that most of the men were to be sent home just as soon as possible, and because of the crowded conditions at the base ports, they had to be prepared for their trip overseas before leaving the hospital.

We endeavored to carry out the contention of most men that the consideration of union should be abandoned in favor of maintenance of correct occlusion and alignment of the jaws, rather than strive for a bony union and the disregard of occlusion.

In selecting a splint to be used in our fracture work we adopted the cast-metal splint for several reasons. A cast splint can be constructed in about one-half the time it takes to construct a swaged splint, it is more durable and easier adapted and is a better looking splint. The vulcanite splints were out of the question except in the more simple cases because of their bulkiness and were naturally very unclean.

The general type of splints used were the open and closed bite, the character of the injury determining the type of splint to be used. No doubt there are many arguments in favor of both, but I prefer to use the closed-bite splint wherever possible because there is not the margin for error that there is in the use of the open-bite splint. Although I think the open-bite splint has many applications and are necessary in many instances. The closed-bite splint was applicable in all cases of fracture of the mandible except those in which there was a large loss of substance, such that would require future operations either plastics or bone implants, or in the case of post-elevator fractures with muscle injuries.

The open-bite splints especially were adaptable in those cases where large plastics were to be done. We found them very useful in post-elevator fractures with injuries to the muscles of mastication overcoming any trismus or muscle contraction which was present in practically all those cases. In many of our cases there were severe muscle injuries



but no fractures. Those cases were either placed in an open-bite splint or given a clothes-pin arrangement, the latter proving successful in reducing many of our trismus cases.

For those cases in which there was a loss of bone substance, with no teeth present in the posterior fragment to hitch on to, the posterior fragment was controlled by constructing a metal saddle for the fragment and attached to the splint on the anterior fragment by means of a lock device which allowed for the lowering or raising of the posterior fragment, that the relations might be corrected to the normal alignment of the lower jaw by using the open-bite splint; the parts were more accessible at all times than with the use of the closed-bite splint.



FIG. 3

Fig. 3—Case of compound comminuted fracture of mandible on both sides with loss of bone. The muscular pull downward and backward prevented the use of an ordinary splint; the parts were held in good position by circumferential wiring, as shown in the roentgenogram. Patient was injured Oct. 14, 1918, and was returned to the United States Dec. 27, 1918.

Impressions for the construction of splints were taken in modeling compound, rather than subject the patient to the pain of plaster impressions, the fragments being taken separately, and were mounted on an articulator in terms of the upper jaw; our condylar were secured by means of calipers instead of a face-bow.

Of the metals used in the construction of cast splints, I think the melchor metal is preferable to either the silver or Victoria, especially



FIG. 4

Fig. 4—Case of compound comminuted fracture in which it was decided to leave the teeth in place, notwithstanding their close proximity to the lines of fracture. A cast metal interdental splint was used. There was practically no suppuration after splint was placed and a good result was obtained. Patient was injured Sept. 30, 1918, and was returned to the United States Dec. 14, 1918.

when one must depend on a gasoline blow-pipe for heat. It fuses at a low temperature, has a good color, is very rigid and easily adapted. It is also quite simple to solder to. Our casting apparatus was of a hinge type, using steam pressure, and either parts or whole splints could be cast in one ring.

For fractures of the maxilla in which there was considerable displacement the parts were placed in their proper alignment under an anesthetic if necessary, and a temporary splint was inserted to maintain the correct relations until a permanent splint could be constructed, at the same time any impactions of the zygomas were relieved. For a permanent splint in maxillary fractures we used a cast metal Kingsley splint with removable bars, for our outside support. For supporting those bars we used a sweat band out of a trench helmet as a head gear which served our purposes very well in the absence of a better one.

Fractures of the nose were supported in their normal alignment either by passing a silver wire through the tissues and clamping on each side by means of lead shot, or by placing a metal splint on the upper anterior teeth with a bar attached to the vulcanite plugs.

One of the most useful operations I know of in the fracture work and the one that helped us out of so many difficulties was the circumferential wiring given us by the late Dr. G. V. Black. It is most useful





FIG. 5

Fig. 5—Case of extensive osteomyelitis. Teeth removed as far forward as the lateral incisor. There was a pathological fracture, but a good regeneration of bone gave the patient a good jaw before his discharge from service. Patient admitted Nov. 10, 1918.



FIG. 6

Fig. 6—Roentgenogram showing large portion of mandible shot away, and many foreign bodies in the tissues.

in controlling fractures of the mandible in which some time has elapsed since the injury, and it is quite impossible to hold the fragments in a splint because of muscle pull and contraction. It is especially useful in bilateral fractures at about the region of mental foramen in which there is a possible loss of substance at one side, the muscles exerting a downward and backward pull into the floor of the mouth. By using the circumferential wiring it makes a difficult case quite simple to control.

It is a very useful adjunct in fractures of the mandible in which there are no teeth present. By the use of an ordinary denture or saddle constructed over the ridge, it will hold the fragments in their proper alignment, for weeks with little or no infection. Its application is unlimited.

No primary wirings were done at No. 15. We had two patients come to us from the mobile units in which the fragments had been wired. The wires had to be removed at once because of the severity of the infections and the great amount of necrosis present in each case. Both cases had severe secondary hemorrhages. No doubt it can be used successfully in old fractures, but practically all of our cases were compound fractures and naturally had severe infections to begin with. No bone implants or grafts were attempted because of the necessity of beds, the men being sent home long before they were ready for that class of work.

We had few cases come to us that required large plastics. None were attempted unless the injury was of a few hours duration, until after the fracture had been splinted and the infections had been controlled, depending on the bacterial count as well as the clinical appearance of the wounds for our guide.

For facial supports in bringing the wounds together we used small hooks fastened on both sides of the wound and laced by means of rubber elastics. We also used the same means to relieve the tension on the sutures after plastics had been done.

We had very few secondary hemorrhages out of the total number of cases cared for; we had two in which the external carotid was ligated and eight that were controlled by packing. Our procedure was to clean up the infection by securing free and independent drainage with the removal of all foreign bodies and pieces of bone possible if any were present; this supplemented by rest, frequent irrigations and dressings.

In summing up the work accomplished at No. 15, from September 12th to November 15th, we had one hundred and thirty admittances to the maxillo-facial department. Of that number fifty-one were fractures of the mandible, nine fractures of the maxilla, with sixteen fractures of the process, which included several teeth. For that number of cases we constructed seventy cast splints, five swaged and one vulcanite. One hundred and five operations were performed, including drainage, removal of foreign bodies and curettages with twenty-five secondary and three primary plastics.



## EXPERIENCES OF THE DENTAL SURGEON IN A BASE HOSPITAL IN THE BASE SECTION, VICHY, FRANCE\*

BY S. D. RUGGLES, D.D.S., MAJOR D. C., PORTSMOUTH, OHIO

**F**ORTUNATE INDEED was the man assigned to a Base Section Hospital in France. Beautiful surroundings and commodious buildings add much to one's happiness, and aid rather more than you might think toward lightening one's labors.

A great pleasure too is derived from being associated with earnest and capable men interested in serving a country that wages war for a great and noble principle.

Primarily the work of my department differed little from that of other hospitals, except that the injury was more severe and a longer time was required for treatment.

Realizing that much depended upon correct reduction and splinting, it was decided early in our service that anatomical occlusion must be obtained and should be striven for regardless of tissue loss.

At no time was the American army short of man-power, therefore the need for the immediate return of men to duty was not a factor, as with some of our allies. A bony union resulting in a permanent deformity was not consistent with our idea of returning men to their families and civil life in the best possible condition for a useful future. It was our conviction that successful bone-grafts could be performed, and the first requisite was a correct occlusion should be established in the beginning.

Practically all the cases of this service were compound fractures and most of them badly comminuted. This necessitated a variety of appliances, all of very rigid construction.

After the diagnosis and records were completed, which included X-ray photographs, history and the necessary data required by the army, the patient was prepared for taking impressions. This included the removal of all loose teeth and roots in or about the line of fracture, except where needed for a temporary purpose, the removal of detached bone and foreign bodies and the establishment of adequate drainage from the seat of fracture at the most dependent position.

Modelling compound was used for taking impressions of the various sections and the models articulated anatomically. Our experience was that this method was sufficiently accurate and much quicker and less painful than the use of plaster of Paris. Wax patterns were made from these assembled parts and splints cast in one piece, or where spaces were

\*Read June, 1919, before the Section on Stomatology, A. M. A., of which THE DENTAL SUMMARY is the representative organ for the dental profession by special arrangement.

to be maintained, a heavy bar was soldered into position. The Double Gunning splint with a bolt in the molar region was used extensively as it allowed frequent examination and cleansing, and permitted the patient to be transported over seas where the time limit of four months was reached.

In many cases where the mandible had not suffered too great loss of substance, the fragments were immobilized with a single cemented splint, thus allowing complete freedom of movement. Where the parts could not be immobilized in this manner, viz.: fracture of the ramus, upper and lower splints were placed and fixation obtained by the use of a bolt.

Certain types of cases, such as indicated plastic work later, were placed in an open-bite appliance, which enabled anesthesia without disturbing the splint. It was our observation that suppuration subsided much quicker when the parts were immobilized.

All fixed appliances were cemented to place with Ames' oxyphosphate of copper, the only absolutely reliable material we found for this purpose.

Two different metals were tried in the construction of these appliances, one known as Victoria metal of English manufacture which has a secret formula, and a French alloy of silver and copper under the trade name of Maxilor. The latter proved to be superior in working qualities. A British casting machine made our work very uniform and most satisfactory.

The much dreaded pneumonia in this class of cases was conspicuous by its absence. A regular mouth hygiene was maintained at definite hours under the direction of a nurse. Normal saline solution only was employed, as the Dakin was too irritating to the mucous membranes.

Upon entrance all cases received the regular liquid diet. This consisted of soup, porridge, egg-nog, cocoa, grape juice and fresh milk when obtainable. Five feedings a day were given. All patients with jaws closed were kept on this diet.

Where the appliance permitted, semi-solid food always was encouraged. The dietitian received regular daily reports and prepared meals accordingly. A special machine was installed for preparing semi-solids. This allowed meats and vegetables to be used, and kept the patients in a better frame of mind. At first a loss of weight was quite noticeable, but after the third week a steady gain was observed.

Many cases of trismus were noted in small wounds to muscles, in fact more than in the cases with extensive tissue loss. Heavy bands of fibrous tissue were often a source of trouble. It was our experience that the closed-bite splint produced the most muscular rigidity. The open-bite case rarely suffered from this trouble.

However, this muscular contraction readily was overcome by wedging for a few days with a clothespin, followed by larger wedges. The pin was inserted first between the anterior teeth and gradually worked back



as the case yielded to treatment. Very few cases called for mechanical appliances.

Last but not least was the general welfare of the patient. Unfortunately for us, every man in the army possessed a hand mirror, and every French hotel was abundantly supplied with larger ones. You can imagine the effect on a man with a badly-shattered face, for it was not conducive to pleasant anticipations upon reaching home and the ones held dear.

Therefore, it became a part of our duty to keep these men busy at something, light work in the ward or making dressings. The regular time allotted to out of doors was rigidly enforced unless the patient was a bed case. We were much indebted to the Red Cross for reading matter, games and entertainment.

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### EXPERIENCE OF AN AREA CONSULTANT IN THE ZONE OF ADVANCE\*

BY GEORGE C. SCHAEFFER, M.D., COLUMBUS, OHIO

MAJOR M. C., U. S. ARMY

**F**OR PURPOSES of administration, the territory occupied by our army in France was divided into the zone of advance, the advance section of the S. O. S., the intermediate section, the Paris area and the base section. The work of the various departments in the medical service also was divided and classified in accordance with the foregoing division of territory. The zone of advance comprised the front line area, extending from the immediate front to a parallel line approximately ten miles in its rear. Immediately back of this zone was the advance section of the S. O. S., which comprised a very much larger territory. In the zone of advance were placed the field, mobile and evacuation hospitals, while in the advance section were a great number of base hospitals which, during periods of great activity at the front, were called on to function as evacuation hospitals.

The work of the maxillofacial service began properly with the mobile and evacuation hospitals, and in both the zone of advance and the hospitals of the advanced section, the work of our department was largely one of prevention. We had to deal with all injuries of the face and neck, exclusive of brain injuries. Those injuries involving the eye, the nose and the ear which did not involve other parts of the face came directly under their respective departments; but as these injuries were almost invariably associated with injuries of other parts of the face, most of them came directly under the care of the maxillofacial department.

It was the original plan to have installed in each mobile, evacuation and base hospital a maxillofacial team, composed of a surgeon who had

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had some special training in this class of work, a surgical assistant and a dentist. The surgeon was to be the head of the team. The dentist was expected to do the splinting or wiring of the jaws, working in co-operation with the surgeon. With this in view, several schools in this country had given special oral and plastic courses to surgeons and dentists, to prepare them in sufficient numbers for the work. Unfortunately, however, this plan was not practicable, not because of the shortage of surgeons and dentists in our army, but because they could not be transferred abroad in sufficient numbers. Another reason was that it was not always possible to have the cases properly classified in the triage and sent to special teams. So a compromise plan was adopted. A dentist was secured for each hospital, and it was arranged that he be called to assist the general surgeon to whose table the case happened to go, in caring for all jaw fractures. By this plan, the dentist was on call twenty-four hours a day, and often had to work steadily during the entire period.

The care of soft parts and the general supervision of the case devolved on the general surgeon, who spent most of his time at general surgical work and who often had had no special training for the maxillofacial work. This was not the ideal plan, but it produced some very good results, and seems to have been the best one possible under the circumstances.

For the guidance of surgeons and dentists in caring for maxillofacial cases, the chief surgeon, A. E. F., on the recommendation of the chief consultant in maxillofacial surgery, issued some bulletins of instruction. The essential features of these bulletins were as follows:

1. All maxillofacial wounds shall undergo thorough mechanical cleansing.
2. There shall be no debridement of face injuries.
3. No bone fragment having any soft tissue attachment shall be removed.
4. Immediate steps shall be taken to arrest hemorrhage, and to prevent secondary hemorrhage.
5. There shall be immediate fixation of all jaw fractures.
6. Adequate inferior drainage shall be established in all fracture cases.
7. As much primary suture of face tissues shall be done as is consistent with good surgical principles.
8. Cases shall be evacuated to the base hospitals as quickly as possible.

It will be seen that in several respects these instructions ran counter to those that were sent out for the guidance of general surgeons in the handling of war wounds. One of the first requirements of these general instructions was that there should be a thorough debridement of all gunshot injuries. The second was that there should be no primary suture of these cases. This was essential and well advised in the handling of general surgical cases. The danger of general infection, and particularly the danger of infection from the gas bacillus, required that all gunshot wounds should be thoroughly debrided, particularly shell, shrapnel and hand grenade injuries. In the handling of face cases there were two reasons why we should not follow these general rules: In the first place, thorough



debridement of all face injuries would have meant the sacrifice of an immense amount of facial tissue which never could have been adequately replaced, and which, if removed, would have necessitated a great amount of unsatisfactory secondary plastic surgery. In the second place, it was shown that there was practically no danger from gas infection in face wounds, no case to my knowledge having been reported.

By thorough mechanical cleansing of the soft tissues and careful suture of these shreds of skin and mucosa into their normal position, much tissue was saved which, otherwise, would have roped up into hard scar tissue and have been absolutely useless in the reconstruction of the face.

As was to be expected, much of this primary suture broke down, but even in these cases, no damage was done by the suture, and the tissues had been brought into some semblance, at least, of their normal position, which they retained to a greater or less extent.

Bone fragments, with some soft tissue attachment, were retained to serve as grafts from which new bridges of bone were to be regenerated. Many of these were lost, of course, but in a good percentage of cases, they served their purpose admirably, and no damage resulted from their retention.

In the matter of fixation of the jaws, it was necessary to allow the dentist considerable latitude for the exercise of his own skill and judgment. Materials for this purpose were very scarce, and the dental men often were forced to resort to extremely crude methods. A great deal of ingenuity was evidenced by many of them, and some excellent results were obtained. An open-bite emergency splint had been devised and was eventually supplied to the advanced hospitals. This consisted of double trays of aluminum filled with modeling compound. The jaws were to be put in the best possible position, the modeling compound softened in hot water, the splint placed in the mouth, the teeth pressed into this softened compound, and the jaws held in that position until the compound hardened. A chin cup and bandage completed the work. This was intended to serve only until the patient reached the base hospital, where permanent splinting could be done. Some of these splints were used with good results. In many cases, however, they were not found practical, and some other method was used. Probably the most common form of fixation used at the front, and one which gave very good results, was that of interdental and intermaxillary wiring. Villain's anchorages were used in a few cases. Arches of heavy silver wire, with interdental wiring, also were used. A few men made swedged splints, and one or two made some cast-silver splints, using for this purpose the crudest sort of home-made casting apparatus. As silver and aluminum were hard to get, some of our dentists used franc pieces from their own pockets for this purpose. Block tin also was used in some cases and made very good splints. The ingenuity of the American dentist is such that he can be

trusted to find some way out of almost any difficulty, and the lack of equipment and materials never daunted him. In the preparation for another war, should such a misfortune befall us, I have no doubt that some standardized method of procedure will be adopted and carried out; but should we ever be caught again as unprepared as we were this time, it is very comforting to know that we have dental men who can be depended on to meet the emergency as efficiently as they did in France during the later months of the war.

Those who have not seen any of these patients as they came to the advanced hospitals can scarcely imagine the difficulties that confronted both surgeon and dentist. They came right from the field with only a first-aid dressing on. The wounds were always lacerated, badly contused and dirty; oftentimes earth was ground into the wound, making cleansing a very difficult matter. In the patients that were delayed in reaching the hospital, the swelling of the tongue, cheeks and floor of the mouth rendered any attempt at immediate fixation futile. These cases often had to be delayed for several days or weeks even before any sort of fixation could be attempted, and, of course, suture as well had to be postponed. In spite of all difficulties encountered, I believe it is safe to say that over 90 per cent. of our patients went back to the base hospitals with the jaws "fixed" in one way or another, and with more or less primary suture having been done.

Too much cannot be said of the work done by the dental men in the advanced hospitals, and there is no doubt that much subsequent bone grafting of ununited fractures has been prevented by the early and efficient fixation secured by these men.

As these cases had to be evacuated very quickly, only the most temporary measures could be instituted. We had to depend on the base hospital staffs for the more permanent appliances to the jaw and for the real plastic work.

The arrest of primary hemorrhage was often a difficult matter, and taxed the ability of the surgeon to the utmost. Concealed hemorrhage from a mouth, very much swollen, made its control a perplexing problem. Ligation of the common carotid was found necessary in a few cases. The prevention of secondary hemorrhage resolved itself largely into a question of the prevention of sepsis. Adequate inferior drainage in fractures of the mandible went far toward controlling the sepsis that almost invariably followed these injuries. This was secured by making a free opening below the border of the mandible at the site of the fracture. In the fractures of the maxilla, the wound itself almost always provided inferior drainage—either externally or into the mouth.

As the consultant in maxillofacial surgery for the advanced section and zone of advance, it was my duty to organize our forces and resources for the accomplishment of our aims. Our forces in surgeons and dentists were meager, and our resources in materials were still less. On my



first visit to the advance hospitals I found practically no plastic surgeons, only a limited number of dentists, and no equipment for caring for face cases. It was necessary to secure dentists to supply the hospitals that were without them. This was done through the chief dental surgeon of the A. E. F. Directors of surgery and commanding officers of hospitals had to be shown the necessity of having some systematized plan of handling our cases. They had to be convinced of the wisdom of the maxillofacial rules of treatment, and as these differed so essentially from those governing other cases, this was no mean task. It was only with difficulty that many of them were induced to consent to calling in the dentist to help splint jaw cases, but it was very gratifying on later visits to find dentists and surgeons working in close cooperation. The securing of materials with which to do our splinting was a hard problem. Modeling compound, ligature wire, heavy silver wire for arches, emergency splints, silver, aluminum, silver solder—these and many other things very necessary for the proper splinting of bad fractures, had to be obtained wherever and however we could, and they had to be taken to the men in the hospitals, so that the consultant reminded himself oftentimes of a sample man for a drug or instrument house. It was a part of the consultant's job to gather ideas from all sources, and to impart them to others. It was a work of education of the consultant and by the consultant.

After seeing the work in British and French hospitals, later in our own hospitals in France and now in our reconstruction hospitals at home, where I am now seeing many of the same cases that it was my fortune to see in France, I am convinced of the wisdom of the original plan of work and the rules laid down for the guidance of surgeons and dentists in the treatment of maxillofacial injuries.

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#### **Aid in Opening a Flask for Inspection**

When the case has been packed with the desired amount of vulcanite and tested with a separating cloth, the latter frequently sticks to the vulcanite. Apply a small amount of gasoline or chloroform to the cloth when you can remove it very easily without disturbing the vulcanite.

—F. W. F., *Pacific Dental Gazette*.

ORAL AND PLASTIC SURGERY IN THE INTERMEDIATE  
SECTION OF FRANCE

## OBSERVATIONS OF A CONSULTANT\*

BY HERBERT A. POTTS, M.D., D.D.S., CHICAGO, ILLINOIS

THE EXIGENCIES OF WAR always distort and change the ideas and ideals of the civilian soldier, and he is at once confronted with problems that seem insurmountable. It was a difficult task for him to reconcile his dominant idea, of serving the wounded soldier to the best of his ability, to the existing military conditions which many times seemed to overshadow his professional duties; and he often was compelled to sit with folded hands awaiting the arrival of orders, equipment, supplies, etc.

Consolation must be had from the fact that in a very short space of time a movement was successfully "put over," the magnitude of which he will never fully realize, and from the consciousness that he was ready and willing to do his part in the "biggest thing that ever has happened."

For study and comparison a vast amount of work must be done to bring the various data into form which will permit the deduction of logical conclusions. I have ventured to classify some of the case records (the few of which I have copies) from which, together with my observations in the hospitals of Orleans, Blois, Tours, Chateaux and Issoudun, I shall endeavor to make some deductions.

## RATE OF FORMATION OF BONE UNION

We will first consider the time elapsing between the date of injury and the patients' arrival at our base hospital:

Of thirty-five cases of fracture of the jaws of varying degrees of severity, twenty came into our hands within one week after injury. Our treatment of these comprised the removal of teeth, roots and foreign bodies from the line of fracture, the establishment of adequate drainage, and splinting or immobilization. Seventeen of these cases were well along toward a bony union, demonstrated clinically and by the roentgen-ray, at the end of twenty-seven days (average).

The three remaining cases of the twenty were very severe, with extensive loss of bone and much comminution of fragments, and with severe involvement of the soft parts. Satisfactory progress with bone formation was demonstrated in these at the end of one hundred and twenty, ninety and sixty days, respectively.

One case seen during the second week after injury was splinted and a bony union attained within four weeks.

One case seen in the third week had a bony union with trismus; there was no displacement and no loss of bone. Under an anesthetic, impressions were taken, splints constructed which were cemented in place, and by means of rubber bands the jaws were forced apart. At the end of seven days the patient could open his jaws to the fullest extent.

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Of three cases seen in the fourth week, one was ununited, owing to roots of teeth and sequestrums in the line of fracture, after the removal of which the fracture healed rapidly under a splint.

Another, which had healed in malocclusion, was improved by an artificial denture.

The other case of this group was a fracture of the upper jaw which progressed rapidly after adequate drainage was established and after it was splinted.

Of four cases seen in the fifth week, one was united in malocclusion; this was re-fractured and splinted, after which it healed rapidly. The three other cases were injuries of the soft parts.

Three cases seen during the sixth week all healed rapidly after the removal of dead bone and drainage.

One case seen after ninety-three days healed rapidly after the removal of dead bone and splinting.

One case, seen 180 days after injury, being fractured at the symphysis, became solid after the wearing of a splint for four weeks.

One case seen 365 days after injury presented a suppurating sinus with a partial bony union; this closed rapidly with new bone formation after the removal of the second bicuspid, whose root extended into the line of fracture.

These few cases demonstrated the crying need of immediate reduction of fragments and restoration, as far as possible, of the dental occlusion, with the retention of fragments and with the teeth held in normal position by means of splints on the upper or lower jaws, or both, which might, if need be, be held in occlusion by a removable mechanical appliance.

Displaced fragments may be held in place by temporarily wiring them together, or by circumferential wiring, or in selected cases, by external pressure. The open-bite splint is at times of service.

I have seen very few cases of trismus following these injuries unless there were foreign bodies within the substance of the muscles of mastication. The mild cases due to neighboring inflammation readily subsided.

#### TECHNIC FOR REMOVAL OF FOREIGN BODIES

In this connection, I might mention the technic of the removal of foreign bodies as practiced at Base Hospital No. 202 by Capt. L. H. Graves and Roentgenologists Jones and O'Dea. I do not recall the name of the method, but it consists of a table beneath which is a movable roentgen-ray tube, the vertical ray of which is directed upward through the foreign body. The fluoroscope, also adjustable and at right angles to the vertical ray, is lowered on the part. The movement of the tube marks the excursion of the body on the fluoroscope. Blunt artery forceps are then placed on the skin at the supposed depth of the foreign body. The tube is again moved, and if the excursion of the tip of the forceps coincides with the excursion of the foreign body, it is exactly at that depth. The forceps are then held to mark the spot on the skin, the headlight of the operator is turned on, and a buttonhole incision is made in the skin. The forceps are introduced, and under the fluoroscope are carried by a bearing motion to the body, which is grasped by the forceps and extracted directly under the eye. From one to five minutes are consumed by the whole operation, and there is no mutilation of the tissues. More

than 400 foreign bodies were in this manner removed, with 100 per cent. success.

#### NERVE INJURIES

I have seen a few patients with injured hypoglossal nerves, but the injuries were either too near the condyloid foramen or too near the entrance of the nerve into the tongue to permit surgical procedure on them. The same may be said regarding the seventh nerve, as it was usually severed within the petrous portion of the temporal bone, or too near its foramen of exit, or too near its exit from the parotid gland, so that it was not promising from a surgical standpoint.

After noting the difficulty which a patient with a severed hypoglossal nerve experiences in eating and talking, I should hesitate very much before utilizing the hypoglossal to repair the facial nerve.

The sliding of the jaw to one side on opening the mouth, after injuries to the neck of the ramus, seems to be due to impaired external pterygoid function, which may be the result of muscular or external pterygoid nerve injury, and usually improves or is recovered from entirely. We see the same phenomenon at times to a mild degree following nerve blocking of the second and third branches of the trigeminus.

Injury of the third branch of the trigeminus in a fracture of the jaw is the rule rather than the exception and is negligible.

#### CHARACTER AND EXTENT OF INJURIES

It seems from subsequent observation of cases that even when there is extensive destruction of soft tissues, one should not delay in the reduction and fixation of the remaining bony fragments in the best possible position. This applies also to the periosteum which molds the bony new growth rather than forms it.

It seems also that anything more than a very feeble effort at primary repair of the soft parts is likely to be a failure, and that the wide open wounds after having been freed of all foreign bodies and injured tissue do better than the ones in which an effort at repair has been made.

Under constant and efficient care for a few days or weeks, secondary closure with a view of limiting scar formation may be attempted; but before attempting extensive plastic surgery, one should wait until all infection has disappeared and until the bacteria and their spores which have been incarcerated within the scar tissue have been killed.

At the earliest possible moment after injury all foreign bodies, including detached bone fragments and tissues injured by the missiles, should be cleanly dissected out, as the lacerated soft tissues do not retain their vitality and subsequently become culture media for bacteria.

Wide open wounds, even when extensive suppuration was present, due to lack of frequent dressing, cleared up more quickly than even partially closed ones. Careful Carrel-Dakin management, especially if the wounds did not communicate with the oral cavity, was the method of choice.



Reduction of fractures, immobilization and retention of fragments, together with adequate drainage, established with the idea of its continuance much longer than in wounds of other parts of the body, were the aims of the maxillofacial staffs within the intermediate section, and a suppurating sinus which continued more than six weeks from the time of injury was an indication for operation and removal of the usual sequestrum, after which the suppuration quickly subsided, cavities in the bone and overhanging ledges of bone being removed.

The retention of bone-forming elements in normal position, especially the periosteum with its attached osteoblasts, even in the presence of suppuration, is very important. I suspect that many cases with extensive loss of bone substance which were splinted for transit overseas, and which seemed to be cases requiring large bone-grafts, were found to have bony union by the time the patients landed, or at least had so far regenerated that very small grafts were required.

When the general order came to evacuate all cases, our aim was to splint them in the best possible occlusion, using splints which could in an emergency be quickly released, allowing the patient to open his mouth, or avoid accident by using an open-bite splint.

The general order stopping all operations except in cases of emergency prevented our doing many plastic operations which we were at that time ready to execute.

The feeding of these patients at times presented difficulties, but usually the friendly cooperation of head nurses, cooks and the Red Cross enabled us to procure an abundance of proper food for them. A variety both in kind and preparation also was provided.

Some few patients came to us with their jaws wired together, and most of them were in good shape. It was no doubt the best means at hand, but dangerous.

I am inclined to think that the better practice would have been to expedite the transportation of the patient to the base hospital without any attempt at reduction or immobilization, as the presence of any sort of appliance is at times misleading to the surgeon. He thinks that as an appliance or wire is about the teeth, the patient has been properly attended to, and may be inclined to procrastinate in sending him to the oral surgeon who, when the patient does come to his hands, finds that there has been union either fibrous or bony, in malposition, and that reduction on account of the delay is more difficult, demanding at times a refracture before proper splinting can be done.

#### A TRIBUTE

I must pay tribute to the wonderful spirit, implicit trust and confidence of the American soldier; his placid mental state and fortitude were marvelous.

There were eight tables in our operating room at Orleans when the trains of wounded arrived. Eight patients were put on the tables, eight

rested on the floor, and as fast as one was taken from an operating table another was placed on it. This routine was kept up until the last one was operated on and dressed. There was never a whimper or complaint from any of them. They even assisted when being placed on the table, and took the anesthetic in the most quiet way imaginable without a word of remonstrance or sign of fear, really a phenomenon almost never seen in a civilian hospital. In the wards also there were no grouches, and they appreciated to the fullest extent the efforts of officers and nurses in their behalf. My hat is off to the doughboy.

### OBSERVATIONS ON THE WORK AT QUEEN'S HOSPITAL IN ENGLAND\*

GEORGE MORRIS DORRANCE, M.D., PHILADELPHIA, PA.

THE HOSPITAL at Sidcup, England, possessed the advantage of beautiful situation, being in the country just outside of London, away from all disturbing factors. Its organization had reached a rare degree of perfection when we arrived there, and the members of its personnel treated us with the utmost courtesy, going out of their way to see that every opportunity for study and observation was accorded us.

A unique plan was practiced in the arrangement of the different services. The division was so effected that there were sections under English, Canadian, Australian and New Zealand surgeons. This plan stimulated a healthy rivalry which assisted materially in the excellent results obtained.

The record system employed is worthy of mention. Every case was studied carefully and accurate records were kept of each patient. All symptoms, examinations and operative procedures, with photographs, conscientiously were recorded. By the method used by Captain Johnson, the roentgenologist at Sidcup, it was possible to take duplicate roentgenogram plates of any given area. This system was adopted later by the American Expeditionary Forces. No attempt was made to conceal or excuse failures. The records were open to all, and the surgeons were frank in discussing their mistakes.

The patients admitted to the hospital were those suffering from injuries at least three weeks old. At first many of them had been operated on previously at the front, but experience taught the surgical staff, and later I had the opportunity and privilege of agreeing with them, that no case should have more surgery at the front than that immediately necessary for the conservation of tissue, unless the patient could be kept permanently by the surgeon performing the primary operation. In the vast majority of cases, time and tissue were lost when the plastic operation was begun in the front line hospitals.

\*Read June, 1919, before the Section on Stomatology, A. M. A., of which THE DENTAL SUMMARY is the representative organ for the dental profession by special arrangement.



Fractures of the maxillæ were for a time treated at this hospital, but subsequently, with the increasing amount of plastic work to be done, patients with these injuries were referred to the Croyden Jaw Hospital. Only those in the very severe cases, and those requiring plastic work in conjunction with their fractures were retained.

The rule followed in the treatment of fractures, except in the New Zealand section, was to remove all the diseased teeth and the teeth in the line of fracture. The British soldiers' teeth, on the whole, were in extremely poor condition, necessitating extraction very frequently, thus increasing the difficulties of the oral surgeon.

Fractures of the lower jaw, with loss of bone substance and teeth behind the first molars, were the most difficult to treat because of the tendency of the posterior fragment to ride upward and outward; to overcome this tendency, a saddle was placed on the inter-maxillary splint to hold the fragment downward and inward in its proper position.

Major Pickrell devised an ingenious method to prevent the posterior fragment from riding upward and outward. He introduced a screw through the zygoma into the coronoid process, in this way retaining the fragment in its normal position. After union had occurred, the screw was removed.

Mr. Collier showed that in fractures of the lower jaw in the molar region, when bone substance was lost, he could avoid a graft by extracting the corresponding teeth of the upper jaw, thus letting the posterior fragment slide forward. His results were very good. One rule we all learned: To obtain union, all teeth in the line of fracture must be extracted.

#### PLASTIC SURGERY

In plastic work, this hospital holds an enviable position; the originality of the surgeons, coupled with their excellent technic, established principles in plastic surgery which will last forever. Major Waldron, of the Canadian section, was the first to use the Esser inlay, that is, the buried skin graft. This was later modified by Colonels Gilles and Newland, so that instead of introducing the graft from without, it was inserted from the inside of the mouth.

A later modification for obtaining mucous membrane for the mouth was the introduction of the free skin graft. The procedure consisted in incising the mucous membranes or scar tissue of the mouth and making a cast with modeling compound of the cavity thus produced. A Thiersch skin graft was placed over this cast of modeling compound, the latter being held by a dental appliance which previously had been cemented to the teeth. This method failed only in exceptional cases.

Colonel Gilles, the most experienced operator in the British section, frequently used a double tubed pedicle flap taken from the scalp or the chest. The advantage of the double pedicle flap is that it can be transplanted for a long distance without danger of the pedicle becoming

infected. He insists that the flap, as in all plastic work, be taken from the area nearest the surface to be covered.

Cartilage grafts were preferred by all the surgeons to free bone grafts in the reconstruction of the nose and supra-orbital margin. It was found that the free bone grafts often became absorbed. No sutures were used through the cartilage to hold it in place.

Previous to our arrival, the staff had run through the entire gamut of methods of nasal construction and had adopted the Indian method as the one of choice, using in every instance a layer of skin for the inner lining. The septum was preferred for nasal support. In the event of its destruction, one or both of the turbinates were selected (if either or both were available), and a free cartilage graft was implanted high up on the forehead, in the area from which the flap was to be taken.

For the correction of shrunken eye sockets, Major Gilles implanted cartilage in preference to performing Mule's operation, in which gold or a glass ball is used, as the inlay became part of the tissues and did not act as a foreign body. The eyelids were restored by an epithelium inlay, with very good results.

Pedicle bone grafts, for example, those of the lower border of the jaw attached to the diagastric, gave better results than the free bone grafts. Free grafts taken from the rib and tibia periosteum, with a small amount of bone attached, and known as osteoperiosteal flaps, were used; all gave fairly uniform results.

Practically all the surgeons used catgut for ligatures and for suturing the tissues, silkworm gut and horsehair being used to close the skin.

Artificial noses were not favored because of their appearance and discomfort, and the necessity of constantly changing and tinting them. Practically all the patients preferred the plastic operations.

The anesthetic used was ether or chloroform, or a mixture of both. In a large number of instances, the anesthetic was administered by rectum, ether always being used in these cases. Very little local anesthesia was used.

#### SUMMARY

In my experience at Sidcup the things most impressed on my mind were the system of records, the care with which the case was studied before operation, the originality of the operators, and the courtesy and patience shown to those of us who were fortunate enough to be assigned to Queen's Hospital for study.

2025 Walnut Street.



GENERAL PLAN OF THE PUBLIC HEALTH SERVICE IN  
CARRYING ON A NATION-WIDE CAMPAIGN FOR  
THE CONTROL OF VENEREAL DISEASES\*

BY DR. C. C. PIERCE, WASHINGTON, D. C.

ASSISTANT SURGEON GENERAL, UNITED STATES PUBLIC HEALTH SERVICE

I AM particularly pleased to have this invitation to appear before the District Dental Society tonight, to present to you one of the most important phases of public health work. It seems to me that it is always an inspiration for all agencies engaged in a particular line of work to know something of what is being done by similar agencies, and cooperating agencies throughout the United States. I should like to very briefly outline the general plan of the Public Health Service in cooperation with the local, state, and health officials, in carrying on a nation-wide campaign for the control of venereal diseases. For many years a small group of persons—doctors, were interested in this great problem of the venereal infections, but we lacked background for the statements which were made quite frequently in regard to their prevalence, on account of the inadequacy of the statistics referring to these diseases. At the time the first call was made for soldiers, the medical officers were enabled to make physical examinations of these men, and to collect a great mass of statistics throughout the United States, from north, and from south, from east and from west, from rural and urban communities, from white and negro soldiers. We had something on which definite statements could be based, in regard to the prevalence of these diseases. The results were such as to bring it very forcibly before the medical officers of the army, and all others. The urgent necessity of some concerted action on the part of all the people of the United States to help ameliorate the conditions existing was apparent. At that time we had a particularly appealing note in the request for cooperation, in that we were engaged in war, and that anything which increased the national efficiency became a patriotic duty of every American citizen. So with that impetus, the work went ahead very rapidly, and it has been said that the progress in venereal disease control in the past year, could not have been accomplished in twenty-five years of ordinary times of peace. That is one of the beneficent results of our participation in the world war. We brought before the public this particular phase of public health, which heretofore had been neglected—the discussion of which had been taboo in polite society. The spreading of the necessary information to prevent infection was a subject that only was discussed

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\*An address before a Convocation of Dentists by Public Health Service, under the auspices of the National Capital Dental Society of the District of Columbia.

between the physician and his patient, but now, thanks to the new idea of regarding these infections in the same way as other communicable diseases, and trying to eliminate the phases of these diseases which heretofore made them subjects not fit for popular discussion, all over the United States people are being aroused to the serious consequences which have resulted from our neglect of this matter in the past. Congress was aroused to a sufficient extent to pass a law last July creating an Inter-Departmental Social Hygiene Board, and establishing a Division of Venereal Diseases in the Public Health Service. This Inter-Departmental Board had as its membership, the Secretaries of War, the Navy, and the Treasury, and three physicians representing the three Surgeons-General of the Army, Navy and the Public Health Service, which is the agency bringing about the cooperation of all the departments of health in the various states to carry on a systematic and uniform plan throughout the entire country to endeavor to accomplish two things: to prevent persons from becoming infected, and to cure those who already are infected. By curing those already infected, we also prevent others from becoming infected, by terminating their period of infectiousness. The bill created by congress, carried an appropriation of a million dollars to be divided pro rata among the states and the District of Columbia, provided they complied with certain regulations promulgated by congress governing the expenditure of this allotment. These regulations, in brief, were as follows: the state, in order to receive the sum to which it was entitled, should have a law requiring the reporting of all venereal disease cases. As physicians are required to report other communicable diseases, such as smallpox, typhoid, scarlet fever, etc., so should they report gonorrhea, syphilis, and chancroid. Forty-four of the forty-six states now have such a law, or a state board of health regulation having the effect of law, so that at the present time there are only four states and the District of Columbia that do not require these venereal infections to be reported. In three of these four states we have assurance that these laws soon will be passed, probably before the end of the present fiscal year. In the other, we have the hope that some day they will pass the law. In each of the forty-four states, there is a representative of the Public Health Service stationed to cooperate with the State Health Executive or Secretary, to carry on this uniform program which has the three-fold phase—the medical, the educational, and the repressive measures. The medical measures are the establishment of free clinics in all centers of population which are large enough to warrant it, where infected persons can receive free treatment and the best modern methods without any questions being asked, or any fee being paid. In all of these clinics cases are diagnosed scientifically and the period of infection is determined by laboratory methods. We are making the treatment of these diseases available to many persons who heretofore were unable to secure proper treatment on account of lack of funds.



In the educational measures, we have gotten out a lot of literature which we are distributing to various societies and clubs and agencies of various sorts, to reach persons directly, and to warn young men about the manner in which these diseases are spread, and particularly to impress upon them the serious nature of the venereal infections. Erroneous ideas are widespread at the present time because a few years ago young men thought gonorrhea was no worse than a bad cold; that syphilis could be cured by going to Hot Springs for six weeks, and it was all over. Those ideas have been responsible for a great deal of the taxation which our states are hearing at the present time. When young men and parents know that twenty-five per cent. of all the inmates of insane asylums are there because of syphilis, they will be more interested in preventing the spread of that disease. When they realize that there is no cause of sterility greater than that of gonorrhea, they will be more interested. It is costing us millions of dollars every year to maintain and educate the little children in blind asylums who are there because of having contracted gonorrhea at birth. The law-makers would be ready to listen to the state board of health when the state legislature is asked for an appropriation to extend this venereal control work. In this educational campaign, we are trying to bring home these important truths to the laity. Doctors have known these things for many years, but they haven't had the facilities for spreading this information broadcast throughout the country, and until we get our entire citizenship interested and ready to assume their responsibility in assisting and maintaining adequate clinics for venereal disease patients, so that the spread of these infections may be prevented, we can get nowhere on the road. The response we have met to this educational appeal has been something tremendous. As a result of mailing out one pamphlet, we had over 25,000 individual letters, which were hand-written, and stamped, and sent in to the Public Health Service, acknowledging receipt of the pamphlet and asking for further information. That shows that those pamphlets reach the hands of people who really are impressed by the information which they carry.

The other phases of the educational work are the handling of lectures before various audiences all over the country, and the use of moving picture films. One film you are going to see tonight. I will just say a word—this film "Fit to Win" originally was designed to be shown to soldiers in the various cantonments, and was then entitled "Fit to Fight." It met with such great success with the men that we put this film into civilian circulation through the Public Health Service, and we have shown it to Rotary Clubs, fraternal organizations, and commercial bodies all over the country, and it has aroused great interest in getting people to realize the seriousness of the venereal infections. Practically all state boards of health are cooperating with us in endeavoring particularly to interest the medical profession and the druggists, and the dentists, and all those who come into contact with people, in the success

of this campaign. We have sent out to all the doctors in the United States, circulars asking them to promise to report their venereal disease cases in accordance with the local regulations. We sent out 133,830 of those very recently, and more than 50,271 replies have been received, where the doctor would sign his name on the dotted line and promise to help in every way in this campaign. We are starting also to enlist the support of medical, dental, and pharmaceutical colleges and organizations of that kind, because the ultimate success of this program depends on the backing we get from the medical profession, the dentists, and druggists. The dentists should report all their venereal infections the same as physicians. When they come into contact with syphilis or gonorrhea, the dentist would be bound by the law of the state, where the state has such a law, to report these diseases, and in many states we are getting some cases reported by dentists. I omitted to say in connection with reporting, that the preferred plan is to report by serial number. It is not necessary to know the name, sex, or address—all they need to know is that there is a case of one of these diseases. When the physician or dentist reports the case by serial number, he assumes the responsibility for seeing that the patient takes the necessary precautions. Should these patients not continue the treatment, it is clearly the duty of the attending physician or other person, to report it to the health authorities so that precautions could be taken to prevent its spread. The liberty of any one who conducts himself so as to make himself a menace to the public health has reached the point where his individual liberty ceases to count.

From September 1st, to January 31st, there were 26,000 cases of venereal diseases reported by the physicians of one state to the board of health. That doesn't mean that that state is particularly heavily infected, however. It means that the state board of health is getting support from the physicians. When all physicians report their cases, we will have all of the states showing up just about the same. There wasn't a great deal of difference all over the United States. It depended largely on the literacy or illiteracy in the state, or whether there was a preponderance of white or colored. The differences were not so very marked, so it is a problem of universal appeal, to white and black, north and south, east and west, to the city and the country; all are exposed to these dangers of venereal diseases. There is no public health problem at the present time which merits the earnest support of all classes of American citizenship, who are interested in the future welfare of our country, more than does this venereal disease problem.

When congress meets again, they should be urged to pass a law requiring venereal diseases to be made reportable in the District of Columbia, so that the district may be placed in the class cooperating with the Public Health Service and the Inter-Departmental Board, along with the forty-four states that have these laws and are cooperating in this



great nation-wide campaign. It is realized that the venereal disease control problem is one that will require a long period of years to bring to ultimate success. But soon we can show that the prevalence of these communicable diseases gradually is being reduced and that this generation is passing on to the next an untainted heritage.

Now that the world has been made safe for Democracy by our fighting men in Europe, those of us who are working on better health problems can feel that something has been accomplished towards making the world safe for posterity.

#### DISCUSSION

DR. O. B. HUNTER: It is quite an honor for me to be invited to speak before you this evening, and I am going, if I may, to dwell upon some of the problems that we have met within our laboratory in teaching. First probably, I might discuss the situation in a general way, and that is to say, the recognition of venereal diseases by dentists as well as physicians, and the cooperation between the physician and the dentist.

The medical men and the dental men are striving for a higher plane of diagnosis and recognition of diseases, and an intelligent cooperation with the patient. All kinds of diseases, particularly of the infectious nature, are being studied very intensively, and many of them are now quite easy of recognition, so far as their differential diagnosis is concerned, which some few years ago was very difficult. The dentist's field is wide. A good many heretofore looked at teeth, studied cavity preparation and proper filling of these cavities, they did not look much further. As far as the surrounding tissues of the teeth were concerned, and the adjacent tissues of the mouth, and the relation of the entire body structure to the teeth, these were very little taken into consideration.

Today, however, the modern dentist does not only examine the mouth, but he looks into the general systemic condition of his patient. And when he sees manifestation of disease which may be exhibited by local lesions in the mouth, he refers that patient for treatment to the intelligent physician, and the intelligent physician, on the other hand, when he sees that his patient needs treatment of his teeth, not only for cavities and various other dental surgical procedures, which have been necessarily heretofore done in part by the physician, he, in turn, refers the patient to the dentist. Thus the dentist and the physician with a proper amount of cooperation, can accomplish a great amount of good.

The policy that we have tried to institute in our dental school, and which we have been doing for some time in the medical school, is to give the dental student an intelligent understanding and make him fully acquainted with general systemic manifestations. He is shown the lesions resulting from focal infections in the mouth, as well as pathological conditions which are not limited entirely to the mouth.

Now, focal infection in most instances is highly characteristic of the mouth cavity. We have focal infections elsewhere, but the great majority of them originate in the mouth. These focal infections many times are serious, as they can result sooner or later in a general septicemia, resulting from a lymphatic or haemotinic absorption.

Now, it is true that gonorrheal conditions are very seldom met with in the mouth cavity, but nevertheless we do see them in the eye, producing conjunctivitis, (ophthalmia) in children and adults. Syphilis, on the other hand, very frequently is seen in the mouth, and it very frequently is transmitted from mouth to mouth, and it is possible to transmit this infection indirectly by instruments or by materials that are carried from one mouth to another. Therefore, it behooves the up-to-date dentist to recognize these pathological conditions. We try to train our students to know these conditions as they meet with them, and when patients sit down in their chairs, they will follow up the case to make an absolute diagnosis. We instruct them in the methods of how it may be done and to whom they may refer such patients. Syphilis manifested as a chancre of the lips, tongue, and

tonsils, absolutely can be diagnosed in most instances, although at many times primary lesions of syphilis, as well as secondary lesions, resemble many other conditions that are met with in the oral cavity. The dental student today is taught the use of the dark field microscope, is taught the technic and the significance of the Wassermann test. He is taught also the characteristics and the mode of infection of the gonococcus, the differentiation from the streptococcus, and what the difficulties are in its riddance and also what the sequela would be from the continuance of the disease. He is taught the infectiousness of it as he also is taught the many ways in which syphilis may be manifested. In the case of the gonococcus, the dental student also is informed in regard to its morphological and staining qualities, how it is differentiated from other organisms in the conjunctiva, the pharynx, the mouth, and he is instructed in the methods of staining and growing this organism so as absolutely to make a differential diagnosis. He also is instructed concerning other portions of the body which this organism involves. The method in which the organism enters the genital organs, and where the prime focus usually is located; how this focus can extend and the differences in the pathological process in both the male and the female, and the resulting sequela. After we have instructed him in the general pathological producing qualities of the organism, the student now studies the tissues as they appear under the microscope. He sees the actual cellular pathology. He sees the various changes produced by the toxicity and other pathological properties of organisms growing in these living tissues. So that he not only gets the idea from the way the organism itself grows, but from the pathological side he gets the idea, grossly, how the tissues are distorted, changed, and perverted, and also the microscopic histology of the individual cell changes.

Now, I believe it is the wish of the U. S. Public Health Service to get the cooperation of every physician and every dentist and every pharmacist in the United States, not only direct, but indirect, through the board or the local board of health, and I believe that the U. S. Public Health Service wishes more than that,—it wishes that the physician and the dentist would take a little initiative in this matter so that with intelligent work along these lines a great good can be accomplished in the eradication of these venereal diseases, just as our other infectious diseases, smallpox, malaria, etc., have been greatly eliminated. With such cooperation, I feel sure that the Public Health Service will win out in the excellent work which they are undertaking and they deserve the hearty support of the dental and medical professions.

CAPT. W. D. VAIL: This meeting, I take it, is indicative of the closer harmony developing between medical men and dental men, and it especially is pleasing to the dental man who is interested in his profession to watch this harmony develop. Recent investigations have proven clearly that the human mechanism must be considered as a whole, and that the man who treats his case symptomatically is doomed to failure, with the possible exception of cases of minor ailment.

It is, of course, to be regretted that better harmony has not existed heretofore, and any discussion as to the reason for the lack of harmony at this time may be superfluous, but may I suggest that we, as dental men, out of courtesy to the medical men present, and for the purpose of being perfectly frank among ourselves, admit that our training in the subjects of pathology, bacteriology, histology, and kindred subjects was not as intensive as it should have been and that we were prone to neglect these subjects after leaving the college. However, we can just as honestly and just as frankly say that recent instruction in dental colleges on these subjects is becoming more and more thorough, and I believe we are safe in making the prediction that in the near future the dental man will take his place as a consultant and a diagnostician. Already one of our more prominent men is devoting the greater part of his time to that phase of work, i. e., in the capacity of a consultant and as a diagnostician in cases of obscure etiology.

No longer the dentist scorns the suggestion of the physician that the disturbance is a result of infection about the teeth, and it also is pleasing to note that no longer the physician insists that the teeth are the root of all evil, but is willing to look a little further and



take into consideration the tonsils, middle ear and other sources of entrance of infection into the general system.

MAJOR LEONARD G. MITCHELL: The lesson taught by this great picture and so ably emphasized by the different speakers is as interesting as it is important. All right thinking citizens will indorse, without hesitation, this part of the great reconstruction campaign which has for its aim the rehabilitation of our country along new lines; new at least, to this generation.

As we note the general trend of affairs for the past twenty years, social, religious and political, then try to see with prophetic vision the logical results and influence upon our national life, we must recognize the great need for a campaign of education along new lines.

Good health is the logical basis or foundation upon which to build the superstructure of contentment, prosperity and happiness; therefore, this evening's program should command our most thoughtful consideration.

What relation do teeth bear to these "social diseases" with special reference to syphilis? Inasmuch as 90% of the people of the nation have bad teeth, let us note a relation between these bad teeth and this dread disease. The germs from a syphilitic ulcer on the lips or in the mouth easily are conveyed to the lips of another, and by the action of the tongue and saliva, carried inside the mouth, through the medium of kissing, drinking cups, or any article which has been in contact with a syphilitic, and touches the lips, teeth or gums of another. This, of course, includes instruments.

If there is a cavity, particularly one with nerve involvement, or a break in the continuity of the gum line, as in the case of pyorrhea, the syphilitic germs may gain entrance to the blood stream. The lessened resistance to disease germs by reason of pyorrhea only makes easier the infection in this way. Thanks to a wider knowledge of the relation of bad teeth to so many physical ailments, the army has seen fit to make provision for dental service for its men to a degree never before reached. The Surgeon-General's office has been increasingly interested in observing the good results accruing therefrom as evidenced in many ways. At the beginning of the war the allotment for the dental service was one dental officer for each one thousand men. After observing the results of a little over a year's work, expensively equipped unit buildings were provided in our camps and the number of dental officers was doubled.

It is my conviction there is no Department of the Surgeon-General's office rated higher, from the standpoint of conservation of health, than this one. Not only have the dentists wrought a great work in the Army, but with the aid of cooperating dentists in civil life, we have placed dentistry and its importance on a much higher plane throughout the country. Because of its importance in this great work of conservation of health, we are to be a most important factor in this campaign of education for a higher and a better citizenship. That the dentists of the country are taking cognizance of this is evidenced in many ways; the old style dental meeting has given way for the scientific instruction kind; bringing in outside men of prominence to lecture and give clinics, study clubs, special courses wherein newer and better methods are studied and learned. Truly it may be said of dentistry, "The old order passeth away, behold all things are new."

DR. WILLIAM C. FOWLER: It is not my purpose to enter into any discussion of venereal diseases or the dangers arising therefrom. I am going to tell you in a very few words something of the activity of the local health department along these lines. First of all, I want to say that the health department is in hearty and active cooperation with the U. S. Public Health Service. Dr. Pierce referred to the fact that the District of Columbia is one of the few places in the United States that has no law for the control of venereal diseases. I want to say, however, that there is pending in both Committees of Congress—the House and Senate Committees,—a bill, which, if enacted into law, will confer on the health officer the power to require the reporting of these diseases and enable him to take steps to prevent their further spread. In this Act, if it should become law, physicians and

other persons, will be required to report to the health department all cases of venereal diseases coming under observation. Dr. Pierce referred to the fact that the patient's name would not necessarily have to be made known. That provision of the law has been arranged for in this way. The patient can make his report by a serial number. If, however, this patient becomes unruly, if he refuses to comply with existing regulations, or if he leaves the jurisdiction, his name will then have to be reported so that he can be followed up. Dr. Pierce referred to the fact that there was a million dollars appropriated by congress to be prorated among the several states which had enacted laws for the suppression of these diseases. The District of Columbia not having enacted such a law is not entitled to its pro rata, which, I believe, amounts to \$3,500. Notwithstanding the fact that we are not entitled to this pro rata, the Public Health Service has furnished the district with literature which the health department has distributed. This \$3,500, in the event the health department becomes entitled to that amount, will be utilized in extending venereal disease control work in the District, but aside from that, congress has appropriated a small sum of money for the establishment and maintenance of a venereal disease clinic. This clinic has been established, and is now in operation at No. 409 15th Street, N. W. The clinic is one of the best equipped clinics of its kind in this country.

DR. BARNHARD: I have some knowledge of the status of thought of the dentists of Washington, and I believe I am backed up by saying that the dentists of Washington will give the U. S. Public Health Service their hearty cooperation in forwarding this great educational movement. I do not believe many people have fully grasped the vastness or the importance of this great work. An official of the U. S. Public Health Service told me the other day that they consider this work second only to the cleaning up of Panama.

DR. CHARLES V. HERDLISKA, Acting Assistant Surgeon, U. S. Public Health Service: The time limit set for the speaking has been far exceeded and in order to enable you to get to the film, "Fit to Win," that I am to present to you, I shall say but just a word:

The motive power of any propaganda is in its literature. The official literature of the U. S. Public Health Service in this propaganda against venereal diseases consists of two kinds: one kind, the reprints by the Government Printing Office of articles which first appeared in the Public Health Reports, issued weekly by the U. S. Public Health Service; the second kind, miscellaneous publications issued by the Division of Venereal Diseases of the Public Health Service. The reprints from the Public Health Reports are mostly scientific in character, whereas the miscellaneous publications are for every phase and walk of life. There is literature for the industrial plant and the commercial institution; for railroads and shipping, for the church, the club, the community center, the home, the libraries, and the schools; for the high schools, the colleges, and the universities.

The Public Health Service has placed an exhibit of Public Health Reprints on one of the bulletin boards, and an exhibit of miscellaneous pamphlets on the other for your inspection, after the meeting. Copies of the reprints may be had from the Government Printing Office; the miscellaneous prints may be had free on application to the Surgeon General of the U. S. Public Health Service.





#### THIS IS THE RED CROSS CHRISTMAS SEAL GIRL

The tuberculosis nurse is playing a tremendous part in the fight to check the White Plague death rate in the United States. This disease killed 150,000 Americans last year and most of these deaths resulted because of ignorance, carelessness and neglect. The tuberculosis nurse, wearing the emblem of the double-barred cross, is spreading the story of health everywhere and is aiding in the nation-wide campaign of prevention and education.

**FIGHT TUBERCULOSIS—USE RED CROSS CHRISTMAS SEALS**

# EDITORIAL

## FIGHTING VENEREAL DISEASES

**I**N THE October SUMMARY, we published a communication from Rupert Blue, Surgeon General, United States Public Health Service, in which he made an appeal to dentists for cooperation in the fight against venereal diseases, and we desire at this time to again call our readers' attention to this subject. If you have not read the "Appeal" on page 812, October DENTAL SUMMARY, do so now, for it will acquaint you with what the government is trying to do to stamp out this great curse.

The great war, just ended, disclosed to an astonished American people that the extensive prevalence of venereal diseases among the men drafted for military service, had its source and inception principally in an infected civilian population.

To combat these diseases, congress when made aware of its extent and alarming depredations into the health of the civilian population of the United States, passed the Chamberlain-Kahn Act, charging the public Health Service with the definite responsibility of organizing an effective campaign for the control of venereal diseases, and appropriating \$1,000,000 for this purpose to be used in 1918-1919, and a similar sum for use in 1919-1920.

Accordingly the Public Health Service outlined a plan whereby it would cooperate with State Health Authorities in effective venereal disease control. This provided for the appointment of an officer for each state to cooperate with the State Health Officer in directing the work of venereal disease control. The plan of procedure includes *educational measures*, such as dissemination of information by leaflets, lectures, exhibits, moving pictures, etc.

*Law-enforcement measures*, which include encouragement of the closing of restricted districts, stimulating enforcement of laws and ordinances directed against prostitution in all its phases.

The establishment and management of institutions for the rehabilitation of venereally-infected feeble-minded persons, urging adoption and enforcement of laws and ordinances compelling the reporting of venereal diseases, the prohibition of quack advertising, the sale of disease nostrums and other measures designed to prevent the spread of venereal diseases.

The third plan of procedure is through *medical measures*. These include the establishment of clinics, securing hospital facilities for venereally-infected persons, making available laboratory facilities for the scientific diagnosis of venereal diseases, obtaining the support of



the entire medical profession by the reporting of their cases to the State Boards of Health, and the treating of venereally-infected persons in accordance with the best modern methods. Also securing the cooperation of dentists and nurses in their respective fields of practice, and enlisting the interest and services of all medical, dental, and pharmaceutical schools, societies, and journals.

The good effect of this campaign, launched about a year ago, is already noticeable. Out of the 20,000 newspapers and magazines in the United States carrying advertising, approximately 140 only, or less than one per cent., are carrying obnoxious advertising. More than ninety-nine per cent. are cooperating. Out of more than 48,000 druggists appealed to, nearly sixty per cent. are cooperating. Out of the 131,000 legally-qualified physicians in the United States, fully fifty per cent. are cooperating. A campaign with the medical, dental and pharmaceutical schools for more advanced didactic and clinical teaching of the venereal diseases was undertaken, with the result that not a school in the United States has recorded an objection or entered a dissenting voice.

The campaign with the 45,000 dentists of the United States is now being launched. Before starting this campaign the Surgeon General invited the dentists of Washington, D. C., to a convocation, held under the auspices of the Dental Society of the District of Columbia. The paper read at the meeting by Dr. C. C. Pierce, Assistant Surgeon General, United States Public Health Service, and an abstract of the discussions will be found in this issue of the SUMMARY. In the December number we shall publish also a paper on the subject of Venereal Diseases, read before the Kentucky State Dental Society, by Dr. L. L. Solomon, appointed to co-operate with the Kentucky State Health Officer in directing the work of venereal disease control in that state.

We ask our readers to carefully peruse these papers and to give their full assistance to the government in this most worthy cause.

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### Post-Extraction Hemorrhage

May I be allowed to suggest that cases of the above condition, where clotting is tardy, may be successfully treated by the introduction of the styptic drugs deeply into the socket by means of a fine hypodermic needle and syringe; this method ensures the drug being placed at the right spot, *viz.*, bottom of socket, and also as the displacement caused by the introduction of a fine needle into the contents of the socket is extremely small, there is little possibility of that disturbance of the partly-formed or attempting-to-form clot, which takes place when plugging with cotton-wool pledgets is resorted to. Further, this method obviates the often unsatisfactory results following plugging.

An old syringe fitted with right-angle hub and long fine needle is a suitable means of application, or better still, the all-glass type of syringe with ground plunger.—*W. A. Woodward, Dental Record.*

# CORRESPONDENCE

## WHAT DO YOU THINK OF IT?

This is the way some dentists dress in their offices and go about in the halls of buildings: No. 1, has on shoes, socks, trousers held up by a belt; shirt with soft collar open, and *no* necktie; elbow sleeves and black hairy arms—a la chimpanzee: mind you, he operates at the chair in this dishabille. No. 2 about the same, but a little better, because he has on a collar and necktie; but has rolled up his shirt sleeves above his elbows and sits in a chair, in his reception room, with one leg over the chair-arm and converses with patients; really he looks more like a blacksmith or hog-killer. No wonder some people call dentists butchers when they dress in this manner—nothing professional about such a style. Wonder how the ladies like to have hairy hands and arms scratching their faces?

I am a man, but this is too disgusting for me; such dressers are more apt to lose patients than gain them, and I know it from what I have heard the ladies say. They are as bad as those who never clean their finger and thumb nails, or lay down a cigar or cigarette stub just before going to operate; one told me that he often ceased operating to go out in the hall and smoke a cigarette; think of a breath strong enough to hold up an egg!

D. O. REFORM.

## LEST WE FORGET THE WIVES

The lady I have in mind formerly lived in Indiana. Her husband is now a Major in the Dental Section.

I bought his office on time—and a big chance of getting back from the service safe and sound.

I returned whole.

But while I was gone, the woman who had already given her husband to her country, wrote me, never to give a worry about the installments remaining to be paid on my office purchase.

I did not have to ask her to do that.

I did not even have to hint it.

She gave voluntarily, to lighten the burden of a soldier, to make him better fit to serve.

She perhaps was not the only one of the wives to serve in her own quiet way.

But are these not the truly great women of our wonderful land?

So men, let us not overlook or forget the fact that the dentists' wives did their bit BIG.

A DENTIST.



# SUGGESTIONS

CONDUCTED BY F. R. CHAPMAN, M.S., D.D.S., COLUMBUS, OHIO

*(To Our Readers: Give others the benefit of your practical suggestions by sending a description of them to Dr. F. R. Chapman, Schultz Building, Columbus, Ohio.)*

## Mending Broken Plaster Casts

As all dentists know to their sorrow, plaster casts are frequently broken. To save the patient the inconvenience and the dentist the time of having another impression made, it is highly desirable that broken casts be mended, but heretofore it has been difficult to find a cement that would work well on the plaster. Due to the porosity of the material, ordinary "stick-ems" are absorbed by the plaster and the plaster and the edges fail to stick together.

Dr. James A. Moag, who has been experimenting with various cements has found that a pyroxylin cement best serves the purpose. He says he finds it indispensable for repairing plastic casts—the best thing, in fact, that he has ever heard of or used.

The cement is waterproof and is made on a soluble cotton base. It holds together perfectly the severed edges of the broken plaster casts.

## Finishing Synthetic Fillings

Anything rough is barred if one wants to obtain good edges. For instance, carborundum wheels or sandpaper discs must not be used. Any excess must be gradually reduced by slow abrasion. Coat all polishing discs, strips, etc., with plenty of vaselin. A good final polish can be given by using a greased felt wheel coated with Syntrex powder. When you slide a greased celluloid strip over the soft cement in the cavity you run the risk of pulling the cement from the edges and introducing vaselin in between the margin and the filling. Do not use metal matrices. Allow for some excess of cement, and when the cavity is full, tighten the matrix; this will give you better edges. After three or four minutes the celluloid matrix will come off the cement by itself.

—*De Trey & Co., Commonwealth Dental Review.*

## Why Every Income Hour is Important

In any business employing from one hundred to one thousand men, it is not essential that the owner or director shall spend every business hour at his desk or at work. If his management is intelligent and his organization efficient, he can, upon occasion, be away from his task many hours and sometimes for days, without seriously reducing his income.

In such a business the owner or director is rarely a manual producer. His policies, his plans, perhaps his minute directions are essential, but the actual earning is done by others. Many a very successful business man is found on summer afternoons on the golf links or tennis court, losing all sense of business for a few hours in relaxation and pleasure.

In proportion as the number of actual earners in a business decreases it becomes more important that the owner or director shall be always present and always profitably employed. In a 100-man business, the absence or idleness of the owner removes only 1-100 of the force and no manual producer. In a two-man business, the absence of the owner removes 50 per cent. of the force and usually 50 per cent. of the manual producers. In the one-man business the owner's absence or idleness removes the entire producing force.

The average dental practice is a one-man business. Though there be competent and interested assistants, the idleness or misdirected effort or absence of the dentist stops much or all of the income.

The best available figures seem to show that between the ages of thirty-five and fifty-five the average dentist will not average more than one thousand income hours per year. After the age of fifty-five the average man is physically incapable of accumulating a competency.

Two courses are open to the dentist who has reached the age of thirty-five. Either he can show that he can average more than one thousand income hours per year for the next twenty years, or he can adjust his organization to make each of those hours sufficiently productive to earn his office expenses, and such remuneration as will defray his living expenses and permit accumulation of enough to support him after the age of sixty-five.

His knowledge, his skill, his equipment, and his assistants are his capital. If they are to be profit-producing for only twenty thousand hours, each of those hours is very important to him and to all who depend upon him.—*Dental Digest*.

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### Care of Dental Instruments

The instruments are first washed with soap and water and scrubbed with a hand brush to remove all loose dirt. The more adhesive dirt which remains is removed by buffing on the lathe, using a stiff bristle brush and revolving at low speed. The spatula, which has become smeared with cement, is first scraped, then polished by using the felt cone and pumice.

Files which are clogged up with soft metal, vulcanite, etc., are cleaned by brushing with a steel brush, called a file card.

After cleaning, the instruments are ready for the sterilizer.

When it is desirable to lay the instruments away for a long period, and there is a tendency to rust, this can be prevented by smearing the



instruments with vaselin or tallow, which protects the surface of the steel not covered by the nickel plating.

Cement slabs are best cared for by having the cement washed off immediately after use. If this cannot be done, the slab and hardened cement are placed in hot water for ten minutes, which loosens the cement, after which it can be easily scraped off.

It is, therefore, advisable to have a number of cement slabs and spatulas ready for use. It is especially important in the case of bone or ivory spatulas and instruments to remove the cement while fresh. Otherwise the cement must be removed by grinding or sandpapering, which quickly wears the instrument down.

Sharp instruments should be protected in handling by inserting the cutting end in a leather sleeve or cork or wrapping with cotton. The burs may be prepared for the sterilizer by wrapping from six to twelve in a piece of gauze. This prevents dulling by contact, which would be the case if a large number of burs were wrapped together.

Cutting instruments should be kept sharp for the reason that sharp instruments cut faster, cleaner and with less pain when excavating a cavity or cutting dentin.—*W. O. Godwin, Dominion Journal.*

### Benzoic Acid as an Antiseptic

The value of benzoic acid as an efficient and prompt antiseptic and devitalizer of bacteria seems to have been overlooked. Miller long ago called our attention to this product. A 1 to 100 solution of benzoic acid will devitalize bacteria in less than one minute. We can appreciate the value of employing a drug that requires so short a time to produce the desired results, so far as a mouth wash is concerned, when it is remembered that the average patient will not retain a solution in the mouth more than one minute, and I doubt if that long.

For carbolic acid (1 per cent. solution) to produce the same results as benzoic acid, it would require anywhere from ten to fifteen minutes; consequently, it is practically useless to employ it in mouthwashes, unless for the purpose of arresting or destroying living micro-organisms in the solution, or for its anesthetic properties.

Benzoic acid is effective as a dressing for root canals, made by dissolving powdered benzoic acid in camphorated oil, or any of the essential oils, to the extent of 1 per cent. As an ingredient in mouthwashes it can be combined with thymol and the essential oils as follows:

#### MODIFIED BENZOIC ACID SOLUTION

R <sub>x</sub> —Acidi benzoici .....	3 ij
Thymolis .....	℥x
Ol. cassiæ .....	
Ol. gaultheriæ .....	aa ℥v
Mentholis .....	℥x

Acidi borici.....	3j
Alcoholis.....	fl 3 ijss
Aquæ dest. q.s.....	Oj

Glycerin or simple syrup may be added sufficient to sweeten, and the solution should be diluted one-half in water before using. Personally, I have secured very excellent results with the above formula in the treatment of pyorrhea and in all suppurative conditions about the mouth.—*Dental Cosmos*.

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### To Insure Proper Height in Setting Crowns

When setting a gold crown or bridge on posterior teeth, the teeth are depressed in their sockets somewhat, as the patient bites down. When the pressure is released the tooth resumes its normal position and the crown is invariably slightly long. I compensate for this condition by using a piece of folded newspaper, four or five thicknesses on top of crown as a final procedure, after the crown has already been closed upon first.—*F. L. Dungan, Dental Digest*.

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### Securing Canal Broaches

To prevent dropping short canal broaches into the throat, always apply the rubber dam before using, covering enough teeth to furnish ample space for manipulating the broach. If for any reason the dam cannot be adjusted, tie a waxed ligature to the hub, and leave enough ligature to extend well out of the mouth. This will allow of all proper manipulation, and render it possible to rescue the broach in case it slips out of the finger grasp, and prevent its dropping into the fauces. A piece of orthodontia wire can also be attached to the hub of the broach, but it does not give as much freedom in manipulation.—*Dental Register*.

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### Flasking

Before pouring the plaster of Paris into the flask to form the mould, thoroughly dust the inside of the flask with French chalk to prevent the plaster sticking to it. The vulcanized case can then be quite easily removed without bruising the flask.—K., in "Oral Health."

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### Casting

Perfect castings are made only in moulds that have been permitted to cool to room temperature—the so-called "cold mould." A mould that is too hot to be borne comfortably on the back of the hand is a distorted mould, and a distorted inlay is the result of casting in such a mould. The hotter the mould the more distortion is presents. After the wax has been dissipated and the mould has cooled, the casting may be done any time.—*R. H. Volland, Jour. N.D.A.*



# SOCIETY ANNOUNCEMENTS

## Notice of the Annual Meeting of the Dental Protective Association of the United States

The Annual Meeting of the Dental Protective Association, of the United States, will be held at the Palmer House, State and Monroe streets, Chicago, on the third Monday of December, the 15th, at 4 P. M. sharp. The report of the officers will be given; a board of directors will be elected, and such other business transactions as should come before the Association.

All members are urgently requested to be present.

By orders of the Board of Directors,

J. G. REID, *President*

J. P. BUCKLEY, *Vice-president and secretary.*

## Pennsylvania State Board

The Pennsylvania Board of Dental Examiners will hold examinations in Pittsburgh and Philadelphia on Wednesday, Thursday, Friday and Saturday, December 10th, 11th, 12th and 13th, 1919. The theoretical examinations will be held at the Musical Fund Hall in Philadelphia and at the University of Pittsburgh, in Pittsburgh. The examinations in practical work will be held on Wednesday, December 10, at 8:30 o'clock, at the Philadelphia Dental College and the University of Pittsburgh. Application papers may be secured from the Department of Public Instruction, Harrisburg. For further information address the Secretary, Alexander H. Reynolds, 4630 Chester Avenue, Philadelphia.

Yours very truly,

ALEXANDER H. REYNOLDS,

*Secretary to the Board.*

## Ohio State Society—Victory Meeting

The Fifty-fourth Annual Meeting will be held at Elk's Hall and Memorial Hall, Columbus, Ohio, Tuesday, Wednesday and Thursday, December 2, 3 and 4. Many special features are in preparation, which include papers by Drs. Paul R. Stillman, New York; J. V. Conzett, Dubuque, Iowa; Major S. D. Ruggles, Portsmouth, and others.

Wednesday will be "Ohio Day," the forenoon devoted to old-fashioned clinics; the afternoon to the popular Illustrated Platform Clinics, followed by the Big Victory Meeting in the evening, and by a Banquet in honor of Col. William H. G. Logan, and members who gave their service to the common cause during the war.

Arrange to be with us.

W. H. HAYDEN, *President.*

F. R. CHAPMAN, *Secretary.*

# OHIO STATE SOCIETY

Make arrangements early to be at the annual meeting of the Ohio State Dental Society, Columbus, Ohio, December 2, 3 and 4. Victory Meeting, Ohio Day "and everything." Watch for all announcements.

W. H. HAYDEN, *President.*

F. R. CHAPMAN, *Secretary.*

## Committees for 1919

### Ad Interim Committee: Board of Directors

W. H. HAYDEN    C. W. MILLS    F. R. CHAPMAN  
A. J. ROSS    E. H. SHANNON  
C. H. SCHOTT    CHAS SWOPE

### Publication

F. R. CHAPMAN, *Chairman*  
L. P. BETHEL, *Editor*    JOHN MOLYNEAUX  
F. R. MANN    PAUL CASSIDY

### Program

W. H. WHITSLAR, *Chairman*  
C. H. CLARK    J. H. WIBLE

### Clinic

J. HERBERT HOOD, *Chairman*  
C. H. SCHOTT    L. E. PHELPS  
J. H. CHESSROWN    D. P. SNYDER

### Board of Censors

W. S. LOCKE, *Chairman*  
J. J. WELKE    T. H. WHITESIDE

### Infraction of Code of Ethics

J. F. STEPHAN, *Chairman*  
C. P. SWENY    A. F. LINSOTT

### Committee on Arrangements

HARRY COPE, *Chairman*  
C. W. STROSNDIER    J. R. KELLY

### Education, Industrial and Oral Hygiene

E. L. PETTIBONE, *Chairman*  
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CARL E. SMITH    T. J. EVANS  
W. G. HAMM    E. C. CHANDLER  
H. M. BREWER    F. M. PURSELL

### Dental Legislation

CHAS. SWOPE, *Chairman*  
E. C. MILLS    H. M. SEMANS  
P. B. CLARK

### Supervision of Components

G. C. NIXON, *Chairman*  
G. W. KENSON    J. M. CHASE    C. W. CRAGG  
E. W. DOLE    G. D. EDGAR    T. S. WARD

### Membership

G. H. WILLIAMSON, *Chairman*, and the chairman of the membership committee of each Component

### Military Affairs

F. M. CASTO, *Chairman*  
GEO. L. MOORE    M. G. PHILLIPS  
A. S. BUTLER    K. C. WILLS

### History

C. I. KEELY, *Chairman*  
F. W. SAGE    V. H. MICHENER  
J. F. DOUGHERTY    W. H. SEDGWICK

### Library

H. M. SEMANS, *Chairman*  
E. C. MILLS    C. S. STARKWEATHER  
J. H. STUKEY    H. R. C. WILSON

## The Component Societies of the Ohio State Dental Society

(This list of Officers is compiled from information furnished by the Secretaries of the various Components; where incorrect it is due to lack of information relative to elections. Secretaries are requested to keep the list correct by notifying the secretary of the State Society or the Editor of THE DENTAL SUMMARY of the result of elections.)

- 1 MAUMEE VALLEY DENTAL SOCIETY, meets 2d Tuesday, June and Oct.—Pres., A. B. Thompson, Metamora; V. Pres., N. A. Cunningham; Rec. Sec., O. S. Applegate; Cor. Sec., H. M. Jordan, Hicksville; Treas., J. A. Benner.
- 2 TOLEDO DENTAL SOCIETY, meets 3d Friday. Pres., T. S. Shaw; V. Pres., H. W. Hisey; Sec., L. C. Jackson, 2205 Ashland Ave.. Treas., C. H. Cox.
- 3 WOOD COUNTY DENTAL SOCIETY, meets 2d Wednesday.—Pres., F. W. Wemmer, North Baltimore; V. Pres., B. D. Roe; Sec., R. E. Milbourn, North Baltimore; Treas., T. M. Lea.
- 4 NORTH CENTRAL OHIO DENTAL SOCIETY, meets 3d Wednesday, Jan. Apr., July and Oct.—Pres., R. E. Wolesslagel, Bellevue; V. Pres., A. G. Thatcher, Fremont; Rec. Sec., L. H. McDonald, Norwalk; Cor. Sec., S. H. Rogers, Sandusky; Treas., E. S. Braithwaite, Willard.
- 5 LORAIN COUNTY DENTAL SOCIETY, meets 1st Tuesday, Feb., Apr., Sep. and Nov.—Pres., W. G. Schaeffer, Amherst; V. Pres., J. A. Minnich; Rec. Sec., P. E. Maddock; Cor. Sec., J. E. Betteredge, Elyria; Treas., J. E. Trombley.
- 6 CLEVELAND DENTAL SOCIETY, meets 1st Monday. Pres., I. M. Saum; V. Pres., J. A. Loughry; Rec. Sec., S. F. M. Hirsch; Cor. Sec., F. M. Casto, 458 Rose Bldg.; Treas., E. D. Phillips.
- 7 NORTHEASTERN OHIO DENTAL SOCIETY, meets 2d Monday.—Pres., N. H. Bishop, Andover; V. Pres., H. O. Frederick; Sec., O. T. Battles, Jefferson; Treas., O. T. Battles.
- 8 NORTHWESTERN DENTAL SOCIETY, meets 4th Wednesday.—Pres., A. Jones, Lima; Vice Pres'ts., J. R. Cannon and I. W. Wright; Sec. J. W. Dimond. Lima; Treas., J. K. Bannister.



# THE DENTAL SUMMARY



- 9 HANCOCK-SENECA COUNTIES DENTAL SOCIETY, meets 2d Wednesday.—Pres., T. C. Schwartzbek, Findlay; V. Pres., A. O. Cole; Rec. Sec., E. V. Burns; Cor. Sec., A. E. Mann, Findlay; Treas., V. H. Michener.
- 10 CENTRAL OHIO DENTAL SOCIETY, meets 1st Wed., Feb., May and Oct.—Pres., O. M. Young, Marion; Vice-Presidents, Frank Burger and F. P. Leonard; Rec. Sec., D. G. Welch; Cor. Sec., F. R. Mann, Marion; Treas., F. C. McGaughy.
- 11 RICHLAND-ASHLAND COUNTIES DENTAL SOCIETY, Meets last Monday, Feb., June and Oct.—Pres., J. F. Winans, Shelby; V. Pres., B. W. Livingston; Rec. Sec., F. O. Eckstein; Cor. Sec., J. H. Bristol; Treas., F. H. Williams, Shelby.
- 12 STARK COUNTY DENTAL SOCIETY, meets 3d Wednesday.—Pres., C. O. Carr, Massillon; V. Pres'ts., B. H. Bowman and J. G. Foltz; Rec. Sec., C. A. Allensworth; Cor. Sec., F. M. Lose, Massillon; Treas., F. M. Lose.
- 13 SUMMIT COUNTY DENTAL SOCIETY, meets 1st Friday. Pres., W. C. Cooper; V. Pres., Jas. Conners; Rec. Sec., H. G. Haas; Cor. Sec., G. H. Dumm, Kent; Treas., C. S. Hoover.
- 15 CORYDON PALMER DENTAL SOCIETY, meets 2d Thursday, April and Oct.—Pres., J. F. Steele, Lisbon; V. Presidents, T. J. Evans, J. H. Chessrown and G. L. Moore; Rec. Sec., J. T. Williamson; Cor. Sec., W. B. Challis, Lisbon; Treas., J. K. Nash.
- 16 WESTERN OHIO DENTAL SOCIETY, meets 1st Thursday, Feb., May and Oct.—Pres., A. A. Davis, Troy V. Pres'ts., P. G. Eddy, J. J. Little and V. E. Bedford; Sec'y-Treas., F. A. McCullough, Troy.
- 17 MAD RIVER VALLEY DENTAL SOCIETY, meets 2d Monday, bi-monthly.—Pres., E. Dibert, Springfield; Vice Presidents., A. E. Bible and H. Houser; Rec. Sec., H. H. Krapp; Cor. Sec. W. B. Seward; Treas., E. V. M. Thompson.
- 18 COLUMBUS DENTAL SOCIETY, meets last Tuesday, Pres., D. P. Snyder; V. Pres., F. L. Gruber; Rec. Sec., E. N. Hoopman; Cor. Sec., F. C. Starr; Treas., A. O. Ross.
- 19 W. D. MILLER DENTAL SOCIETY, meets 2d Thursday, May and Oct.—Pres., W. S. Deely, Mt. Vernon; V. Pres., H. S. Barrick; Rec. Sec., L. E. Davis; Cor. Sec., E. V. Prior, Newark; Treas., W. B. Grossman.
- 20 MUSKINGUM-COSHOCTON-GUERNSEY COUNTIES DENTAL SOCIETY, meets 2d Thursday, Jan., May and Sept.—Pres., W. H. Dillon, Zanesville; V. Pres., P. F. Walker and A. W. Boyd; Rec. Sec., J. A. Honabarger; Cor. Sec., B. M. Beatty, Zanesville; Treas., H. J. Boyd.
- 21 EASTERN OHIO DENTAL SOCIETY, meets 1st Thursday, May and October.—Pres., C. S. Starkweather, Bellaire; First V. Pres. L. B. Peterson, Steubenville; Second V. Pres., George Sharp, Flushing; Cor. Sec., J. K. Hunter, Bridgeport; Rec. Sec., H. A. Smith, Steubenville; Treas., S. C. Hasbrouck, Barnesville.
- 22 BUTLER COUNTY DENTAL SOCIETY, meets 3d Friday, each month.—Pres., P. A. Krucker, Hamilton, V. Pres., E. E. Meisterhaus; Sec.-Treas., F. T. Craven, Hamilton.
- 23 MIAMI VALLEY DENTAL SOCIETY, meets last Monday. Pres., H. C. Huffman; V. Pres., H. L. Oliver; Cor. Sec., H. M. Brewer; Rec. Sec., W. B. MacBain; Treas., J. R. Arthur; J. M. Chase; representative to the State Dental Society.
- 24 REHWINKEL DENTAL SOCIETY, meets 3d Thursday. Pres., A. M. Bush; V. Pres., O. A. Thompson; V. Pres., C. H. Martin; Sec., F. D. Wollard, Washington, C. H.; Treas., C. V. Lanum.
- 25 HOCKING VALLEY DENTAL SOCIETY, meets 1st Monday.—Pres., J. J. Stukey; Vice Pres'ts., C. F. Ackers and W. M. Scott; Sec., R. H. Wetzel, Lancaster; Treas., D. P. Vosper.
- 26 SOUTHEASTERN OHIO DENTAL SOCIETY, no report
- 27 CINCINNATI DENTAL SOCIETY, meets 3d Friday. Pres., R. W. Taylor; V. Pres., W. Foster; Rec. Sec., P. Cassidy; Cor. Sec., C. H. Stricker; Treas., J. D. Gordon.
- 28 SOUTHERN OHIO DENTAL SOCIETY, meets, 3d Monday, May and Oct.—Pres., O. D. Donaldson, Portsmouth; V. Pres., F. C. Goodwin; Sec., E. C. Jackson, Portsmouth; Treas., E. O. Buchanan.
- 29 OHIO VALLEY DENTAL SOCIETY, meets 2d Wednesday, Apr and Oct.—Pres. M. D. Hartinger, Pomeroy; V. Pres., R. B. Church; Sec., C. S. Shumaker, Pomeroy; Treas., J. B. Hodge, Middleport.
- TUSCARAWAS COUNTY DENTAL SOCIETY (a new society) meets 2d Tuesday. Pres. A. W. Davis, Dover; V. Pres., F. H. Waldron; Sec. and Treas., E. S. Wagner, Dover.

# THE DENTAL SUMMARY

## Michigan State Board

### Rules Governing Examinations

Information regarding examinations in the State of Michigan, and rules governing them:

#### APPLICATIONS

**RULE I.** All persons who wish to practice Dentistry in this State must fill out and send to the Secretary of this Board an application, a blank form of which will be furnished by the Secretary.

**RULE II.** In the case of those wishing to take the examination under the terms of reciprocal contracts existing between this and other States the application must be accompanied by a letter of recommendation from the Board of Dental Examiners of the other State.

**Rule III.** In all other cases the application must be accompanied by the applicant's dental diploma. If the applicant is about to graduate, and his dental diploma has not been granted before the examination begins, he may present in lieu of it a certificate (a blank form of which may be had from the Secretary of this Board), properly filled out and signed by the dean or secretary of his college, certifying that he has completed, or will complete, the required course in dentistry, and will be awarded his diploma.

**RULE IV.** The applicant under Rule III, must also present with his application and dental diploma (or college certificate), evidence of having earned at least 15 units from a standard high school, or college, as indicated in the following list:

Nine of these units *must* be from the following subjects:

*English Grammar* and *Rhetoric, Composition and Literature*, three units required, four allowed; *Latin*, two units required, three or four allowed (one year's work in German or French may be substituted for the second year in Latin); *Algebra*, one unit required, one and one-half allowed; *Geometry*, one unit required, one and one-half allowed; *Physics*, one unit; *Chemistry*, one unit.

The remaining six units may be from the following subjects:

*History*, one, two or three units allowed; *Botany*, half unit; *Zoology*, half unit; *Physical Geography*, half or one unit; *Trigonometry*, half unit; *Drawing*, half unit; *German*, two units; *French*, two units; *Manual Training*, one unit. A year's work in a dental office may be substituted for manual training. In all cases the applicant must present a certificate of moral character.

**RULE V.** Junior students wishing to take the examination in the work embraced in the first two years of the college course must send to the Secretary a certificate properly filled out and signed by the Dean or Secretary of his college, certifying to the work that has been completed. Such students may take the examination in all work so certified. Failure to pass in any subject so examined in, means that he must be re-examined in such subject in his final examination.

**RULE VI.** All applications and credentials should be in the hands of the Secretary at least ten days before the date of the examination.

#### FEES

**RULE VII.** The fee for all examinations, including those examined under reciprocal contracts with other States, is (\$20.00) twenty dollars.

**RULE VIII.** In the case of Junior students, taking examinations in the work covered in the first two years of the college course, the fee is divided; ten dollars (\$10.00) is paid for the Junior examination and ten dollars (\$10.00) for the final.

**RULE IX.** The fee for re-examination in case of failure to pass, is (\$10.00) ten dollars.

**RULE X.** No fee will be returned to an applicant after he has filed his application and entered upon his examination.

#### EXAMINATIONS

**RULE XI. Theoretical.** The examinations shall be written or oral or both, in the following subjects: Anatomy, Histology, Physiology, Chemistry, Oral Surgery, Pathology, Hygiene, Bacteriology, Materia Medica and Therapeutics, Orthodontia, Operative Dentistry, and Prosthetic Dentistry, Crown-and-Bridge-work and Metallurgy.

**RULE XII. Practical Operative Dentistry.** Each applicant must come prepared to insert gold, amalgam and silicate fillings. Each cavity, when prepared, must be inspected by the Examiners before the filling is inserted. Patient and operating chair will be furnished by the Board, but all materials and instruments (including dental engine) must be supplied by the applicant.

**RULE XIII. Practical Prosthetic Dentistry.** Each applicant must furnish plaster models for a full (upper and lower) denture, from impressions taken from the mouth, or from zinc dies furnished by the Board; must prepare *Bite-Plates*, mount on a good anatomical articulator, set up teeth with *Normal Occlusion* and finish to the point of flasking. Plaster and gas will be furnished free, and teeth by the Examiner in charge, at cost price; all other materials and tools by the applicant.

**RULE XIV. Practical Crown Work.** Each applicant must construct complete a porcelain faced (Richmond) crown. A prepared, natural, anterior upper root must be embedded in a plaster model, mounted on an articulator with a model of the occluding teeth, and the crown made on this root. Gas and foot bellows will be furnished free, and the porcelain facing by the Examiner in charge, at cost price; all other materials and tools by the applicant.

**RULE XV.** The Board at its discretion may change, or add to, any of the requirements under the three preceding rules.

(Applicants taking the examination under the terms of reciprocal contracts with other States will be required to take the examinations in practical work only).

#### MISCELLANEOUS

**RULE XVI.** Two regular examinations will be held each year; the Spring examination in June and the Fall examination in November. All examinations will be held in the dental college building at Ann Arbor.



## THE DENTAL SUMMARY

RULE XVII. The law makes no provision for temporary licenses to practice between examinations, and none will be granted.

RULE XVIII. In the theoretical work of the examination the applicant must have a general average of seventy-five per cent. In practical operative, and in practical prosthetic and crown work, if the applicant falls below seventy-five per cent. he shall fail to pass; but he may be re-examined on that in which he failed at the next regular examination.

RULE XIX. All written examinations shall be on paper furnished by the Board.

RULE XX. At the opening of the examinations the applicant will be given a number, the applicant to use this number on all examination papers. *In no case shall the applicant's name appear on the examination paper.*

RULE XXI. Anyone detected in trying to give or obtain aid shall be dismissed from the class and his or her paper for the entire work will be rejected.

RULE XXII. All writing must be legible and, together with spelling and use of correct language, will be taken into account in grading the answers. A correct set of answers to the questions on any one paper shall entitle the writer to the full mark on that subject, viz: One hundred points. Partial or imperfect answers will be graded by the Examiner in accordance with their degree of fullness and correctness.

RULE XXIII. Applicants are expected to be punctual at all examinations.

RULE XXIV. Read the questions very carefully and do not give any information in the answers that is not asked for.

RULE XXV. Write answers in the order of the questions. Do not copy the questions on your examination paper, but write the number of each question, in Roman numerals, in center of page before the answer.

RULE XXVI. Papers containing the questions must be returned to the Examiner, if he so directs.

Official schedule of Session, Nov. 17 to 22, 1919, 8 a. m., at the Dental College, Ann Arbor, Mich.

Monday, Nov. 17—8 a. m., *Physiology*, J. C. Arnold; 10 a. m., *Histology*, A. P. Whittemore; 1 p. m., *Bacteriology*, J. B. Roe; 3 p. m., *Chemistry*, B. S. Sutherland.

Tuesday, Nov. 18—8 a. m., *Materia Medica and Therapeutics*, J. B. Roe; 10 a. m., *Oral Surgery*, E. O. Gillespie; 1 p. m., *Anatomy*, A. P. Whittemore; 3 p. m., *Orthodontia*, J. B. Roe.

Wednesday, Nov. 19—8 a. m., *Pathology*, E. O. Gillespie; 10 a. m., *Prosthetic Dentistry*, J. C. Arnold; 1 p. m., *Operative Dentistry and Hygiene*, B. S. Sutherland.

Thursday, Nov. 20—8 to 12 a. m., *Crown Work*, B. S. Sutherland, assisted by Gillespie and Arnold; 1 to 5 p. m., *Plate Work*, J. C. Arnold, assisted by Whittemore and Roe.

Friday, Nov. 21—8 to 12 a. m., *Crown Work*, B. S. Sutherland, assisted by Gillespie and

Whittemore; 1 to 5 p. m., *Operating*, E. O. Gillespie, A. P. Whittemore, assisted by others of the board.

Saturday, Nov. 22—8 to 10 a. m., *Plate Work*, J. C. Arnold, assisted by Whittemore and Sutherland.

B. S. Sutherland, secretary-treasurer.

### Ohio—Miami County

Dayton, Ohio, Oct. 6.—The second annual convention of the Miami Valley Dental society held its session at the National Cash Register school house, shortly after ten o'clock, Monday morning.

More than 150 dentists from surrounding towns and counties were in attendance, and it was the opinion of executive officers that this year's session will be the best planned by the practically new organization.

Carl D. Lucas, Indianapolis, opened the session with an address, illustrated by stereopticon slides, on "The Relation of Oral Focal Infection to General Chronic Sequellae."

Following an address of an hour by Dr. Lucas, Sidney Rau, Cincinnati, spoke on "Mouth Hygiene."

Luncheon was served at the N. C. R., and all the dentists were guests of that organization.

From 1 to 2:30 in the afternoon, a table clinic was conducted.

Several short talks were made, including the following:

"The Do's and Don't's in Connection With Extraction of Teeth," H. R. Barclay; "A Suggestion in Casting," E. J. Cassell; "Impressions Taken With Modeling Compound," J. C. Early; "Exodontia-Phases of Winter's Technic," A. J. Lewis; "The Correct Manipulation of Plaster for Impressions and the Correct Manipulation of Spencer's Material" and "Pulp Conservation in Crown and Bridge Work," H. L. Oliver; "Roach Bridge Work," J. W. Siegfried; "Something in Gold Work," Z. N. Wright; "Roach Attachment Technic," Edward Kibler, Indianapolis.

Carl D. Lucas conducted an operative clinic at the Miami Valley hospital at 3 o'clock in the afternoon.

Officers of the society are H. C. Huffman, president; H. L. Oliver, president-elect; H. M. Brewer, corresponding secretary; W. B. McBain, treasurer; J. R. Arthur, treasurer, and John M. Chase, representative to the state convention.

### Influenza a World Plague

According to a London writer it is reasonable to believe that throughout the world about 6,000,000 persons perished from influenza and pneumonia during the last three months. It is estimated that the war caused the death of 20,000,000 persons in four and a half years. Thus it may be seen that influenza has proved itself five times deadlier than the war. Never since the black death has such a plague swept over the earth. It is pointed out that this illustrates the need of a new survey of public health measures.—*Ellingwood's Therapeutist*.

# NEWS and OPINIONS

CONDUCTED BY G. E. HARTER

Never allow yourself to owe anybody more than you can easily pay, and never allow anybody to owe you more than you can afford to lose without cramping yourself.

Don't be ashamed of economy, even to the pinching point.. Most of the great fortunes began that way.

Success demands sacrifice; the greater the sacrifice the greater the success. We must put something into the world if we expect to get anything out of the world.

Try to remember that everything began as Thought; that Thought is universal and not personal; that if you are to be anybody you must think enough, long enough, hard enough and pointedly enough to make an impression of yourself in thought-stuff; that accomplished, material things and conditions must build themselves into the form of your thoughts. One of the oldest and best books in the world says: "As a man thinketh in his heart, so is he."

The place for a dentist's hands is in the mouth of his patients; not in their pockets. Of course, "the laborer is worthy of his hire"—if he *is*. Service is entitled to its recompense; but it must be service.

The war may be over, but 5,000 American troops sailed for France the other day.

Make a distinction between investment and speculation. Investment is intended to provide for the future, while speculation is merely a game of chance. If you play poker you allow yourself a certain amount to use in play; do the same with speculation. When you have lost the amount allowed, stop playing, whether the game be poker or oil-wells.

The German mark is now worth about three cents in American money. An indication of the real value of Hun civilization, as it was. But nobody should deceive himself. There are some mighty good characteristics in the German mind, economy and self-sacrifice among them. Germany has failed to dominate the world by force; lookout for a renewal of the effort directed toward commerce.

Did you read the article by Dr. Percy R. Howe, in the October number? If not, do it at once. There is some mighty sound sense in it. And here's a coincidence: While I was reading the proof of the paper, a dental friend of mine came in, with a worried look in his eyes, and said: "Do you know that those fellows have got a lot of us common dubs frightened, so that we don't know what to do with dead teeth and root abscesses? There seems nothing left except ruthless extraction, and I'm certain that extraction is often nothing

less than a crime." Then I read Dr. Howe's article to him, and he went out with a smile on his face that was good to see. Dr. Howe isn't theorizing; he bases his conclusions upon research and sound reasoning, which is more than can be said for some of the men on the other side. Dr. Howe has consented to allow us to reprint his article in pamphlet form; and we shall be glad to send copies to all who apply.

The W. D. Miller component, down Newark way, is composed of a live and intelligent group of men who really are studying their profession with the object of arriving at its fundamental principles, and then applying them to their own practice. I spent a day and a night with them during the second week in October, and enjoyed my visit thoroughly. My thanks are due to Dr. and Mrs. Prior for special courtesies.

Don't forget to renew your subscription to THE DENTAL SUMMARY. We do not offer premiums nor anything of that kind, but we do think we are publishing the one magazine that no dentist can afford to be without. And many of our subscribers agree with us.

Speculation is rife again. I know; many men have grown very rich almost over night by a "lucky" buy of oil stock or something of the kind; but many hundreds have lost their all playing the same game. If you *must* speculate, set apart an amount that you can afford to lose, and do not exceed it.

Elmira, N. Y., has established a "Mental Clinic," for the purpose of examining school children that seem to be deficient mentally, in order that proper treatment may be given. Good. Special handling of such cases often has resulted in restoring entire normality in a child that otherwise promised to be a burden upon the community rather than an asset.

Seems that the idea that the mouth and teeth are the rulers of the body must be abandoned or considerably modified. All the ills that human flesh may endure do not originate in the mouth. It is better to consider the mouth and teeth as indices of the bodily condition, than the sole authors of it.

Begin right now to make appointments that will allow you to attend the Ohio State meeting, at Columbus, beginning December 2. Dr. W. H. Whitslar, chairman program committee, has arranged a program of unusual excellence and interest. Dr. W. H. G. Logan will be there, guest of honor at the banquet; also Dr. J. V. Conzet, president of the National, and other men of note. The fifteen-minute stereopticon clinics will alone be worth all attendance will cost. Let's have a record meeting.



## THE DENTAL SUMMARY

A free dental clinic, at which six children were treated daily, was a feature of the Syracuse, N. Y., fair last month. New York dentists are awake to the opportunities of the present condition of public opinion, and take full advantage of them. Something of the same kind was staged at the Chattanooga, Tenn., fair early in the month.

At Newcastle, Ind., Dr. William A. Winters, nationally known as the father of Catherine Winters who disappeared in 1913, was fined one cent by a jury in circuit court, for being intoxicated. The court costs amounted to some \$30; but the cost of the trial, including time of judges and jury, must run away up into the hundreds of dollars, which the community must pay, without accomplishing any useful purpose so far as I can see; and the case is to be appealed! I don't believe in the saloon; I have no use for John Barleycorn in any form; but I hope I have common sense enough to know that such things are merely costly travesties that should be discouraged until they become impossible. Why should a man be fined for intoxication, anyhow? Hasn't he already paid a terrific price for his indiscretion? One good drunk is equal to several years lopped off the expectation of life, besides the loss of self-respect.

Fort Smith, Ark., needs fire protection and proposes to raise the needed money by imposing a tax on dentists, physicians and lawyers of \$15 to \$25 annually, the amount depending upon the length of time in practice, the lesser amount for five years, the larger for over five years. The idea is wrong fundamentally. The professions mentioned are not the sole, nor the chief beneficiaries from fire protection. All who are benefited should pay equally.

Bridgeport, Conn., reports a marked decrease in the number of backward pupils since the installation of the dental clinic. I sometimes wonder if there is not a direct connection between the teeth and the brain, as there is known to be between the arms and the brain. Exercise of the arms will greatly increase mental expression.

A number of Canadian army officers are taking post-graduate dental courses at the Dunlop Research Institute, Chicago. Our friend, Dr. J. P. Carmichael, of Milwaukee, is one of the instructors.

Nassau county, N. Y., school children do not need to "go to" the dentist now; he'll come to them, in his new Red Cross Junior Educational Dental Car, no matter where they live within the limits of the county. And the idea originated with a woman, who is not a dentist, Mrs. E. C. Brower, of Roslyn, L. I., chairman of the Red Cross Committee on Schools of the county. The work is not a charity; every operation is charged and paid for, by the parents of the children if able, by the county school-board otherwise, but at merely trifling figures—one filling a quarter, two, 35 cents; three, 45 cents, and so on. The idea is merely to cover actual cost of materials.

Dr. A. Van Ark, Toledo, returned recently from New York, where he completed a course in porcelain practice under Dr. Thompson.

All colleges are reporting a record enrollment for the session of '19-20. If all of them stick, we may hope for some relief from the shortage in the dental profession within the next semi-decade.

If the course in dentistry is again to be lengthened, would it not be well to divide the course into Operative and Mechanical, with shorter time required for the latter?

The oldest passenger to take a trip in an aeroplane thus far is Dr. C. G. Wilkinson, of Plattsburg, N. Y., aged 85, a dentist. He was greatly pleased, declaring that he should own one were he a bit younger.

The board of education of Grand Haven, Mich., has decided to install a dental clinic.

Indianapolis board of health has taken steps toward the establishment of a dental clinic in connection with the City Dispensary.

South Bend, Ind., dentists are cooperating with the board of school trustees of St. Joseph county, toward the establishment of free school clinic.

### Dark Days for Chinese Dentistry

If the Chinese can boast that nothing is new to them and that all the arts and sciences are old stories in China, it is still true that for operations in dentistry an American or a European would hardly care to go to a Chinaman. Despite their boasts, the Chinese have not been slow in recognizing the superiority of American dentistry, although there are some who adhere strictly to ancient methods, and it is averred that every year one or two Chinese dentists of the old school come to the Chinese quarters of every large town and remain until their customers have had their teeth "put in order."

The work is ludicrously primitive. The operator extracts all teeth with his fingers, and it must be admitted that his success is astonishing. From youth to manhood he is trained to pull pegs from a wooden board. This training changes the aspect of the hand and gives the student a finger grip amazing in its strength, equivalent, in fact, to a lifting power of three or four hundred pounds. For toothache he employs opium, peppermint oil, cinnamon oil and clove oil. He sometimes fills teeth, but does it so bunglingly that the fillings stay in only a few months.

An element of superstition runs through all the work. According to the system all dental woes are brought on by tooth worms. The nerve pulp is such a worm, and is always shown to the patient. For humbugging purposes also the dentist carries about in his pocket some white grubs, and after he has extracted a tooth he shows a grub to the sufferer as the cause of all the trouble.

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### Buy Red Cross Christmas Seals

Before medical science had made important discoveries concerning the plagues that afflict mankind, epidemics were looked upon as evidences of the wrath of God, before which the victims were helpless. But as the world grew more enlightened renewed hope came to the sufferers. With a better understanding of natural phenomenon, visitation of divine anger, as a cause of pestilence, largely disappeared.

Today the greatest plague with which the human race is afflicted is tuberculosis. It is an unseen enemy. It creeps upon its victim unawares. According to figures of the National Tuberculosis Association, it claims yearly more than 150,000 lives and there are over a million sufferers from this disease in the United States today.

Furthermore, reports of public experts throughout the country show that between 75 per cent. and 90 per cent. of the population in any civilized community is infected before the age of 16.

It is this alarming situation that has awakened the public health authorities in an effort to combat this menace the National Tuberculosis Association and its 1,000 affiliated state organizations have joined a nation-wide crusade.

Funds for carrying on this work are derived chiefly from the sale of Red Cross Christmas seals, enabling every man, woman and child to take part in this "war after the war."

The seals however, do more than provide the sinews of the conflict. The bright little sticker is literally a messenger of good cheer, a symbol of another chance to those who are already afflicted by the disease.

The colorful tab is a reminder that the deadliest disease of the present age has many hopeful aspects.

A little more than a hundred years ago no man could walk in the street without seeing one out of every ten pedestrians pockmarked. Today the man or woman with a pitted face is almost a curiosity.

Smallpox yielded to vaccination. Yellow fever practically disappeared when measures were taken to eliminate the mosquito, which science found to be its carrier.

And there is a cure of tuberculosis. It lies not in medicine nor drugs, but chiefly in the sunlight, fresh air, rest, nourishing food under medical supervision and freedom from worry.

These factors in health restoration are best obtained in a sanatorium. The number of sanatoria in the United States is by no means adequate for the accommodation of those who need these institutions, and need them urgently.

In order to provide these facilities and carry on the work, the National Association is seeking to raise \$6,500,000, chiefly through the sale of Red Cross Christmas seals.

They are the best health insurance a community can buy.

School board, Burlington, Ia., wants a dentist to come there to take charge of school clinic.

### Nevertheless, the Work Should be Done

EDITOR SUMMARY: I would hate for the public to even conceive of the idea that there are no "Public Spirited" dentists in the City of Dallas, and for that reason I would call your attention to an article that appears in the October issue of THE DENTAL SUMMARY, under such heading.

The City Health Department has installed a very nice dental equipment in connection with the emergency hospital and has placed a salary of \$50 a month for a dentist who will come up and devote his entire afternoons, every afternoon and all afternoon, to this work. Do you think that it would take "Public Spirit," or "Missionary Spirit" to prompt a man to accept this offer?

Along with the strides and advancement that have been made and are being made in the dental profession, I am surprised that your paper does not make a few remarks in this connection. Do you know of any established dentist who could afford to accept this proposition? Do you know of any man just entering the dental profession who could afford to take it up? I will say that I am a graduate of this past year from Tulane University and making a very hard struggle to get a start, and I am sure that I cannot see my way clear nor can anyone else whom they have accosted in regard to the matter. I will say, however, that on account of the limited amount of office space, there are several men who absolutely cannot get space and at present they have a very fine dentist in charge of their clinic, Dr. Aavan.

This one thing has been a source of much conversation among the young dentists, especially, as no old dentist has time to give it consideration, and there is one of the leading dentists here in charge of employing a man for the position and he seems to think himself that it is a large salary. \$50 a month for all afternoon, every afternoon in the week—what do you think of it?

Very truly,

J. LOVIC BULLARD.

Dallas, Texas, Oct. 14, 1919.

Sometimes, sacrifice pays big dividends.

On another page we are printing quite liberal extracts from a talk by Dr. Levy, dentist, of New York, who seems to have swallowed a bone, or something. Anyhow, he makes some rather rash accusations against the profession of which he is a member, that should not pass unchallenged. The practice of dentistry is not, of course, confined to the angelic hosts; still, I am inclined to think that there are a lot of men in the profession who are imbued with high ideals of service.

Down in West Virginia, Dr. Harry Halstead occupies the dual position of conductor and dentist on the Chesapeake & Ohio railroad. He carries his "kit" with him, and his train stops in response to the hail of would-be patients, and waits until the required service is rendered. Just what the passengers think of the arrangement is not recorded.



## Men Benefited by Army

The average gain in weight of the American soldier in the two years of the war was between fifteen and twenty pounds. One-half million men were examined for intestinal parasites, and 69,508 were found to be suffering from one or more. Of these, 56,000 had hookworm. Eighteen per cent. of men from the Southern States were found to be suffering from hookworm.

Here is a comparative table, showing the great advance made in disease prevention in the United States Army. The figures for the world war are actual, while those of the earlier wars are based on hypothetical armies of equal size.

Disease	W'ld War	Span. War	Cvl. War
Typhoid.....	213	68,000	51,000
Malaria.....	13	11,000	13,000
Dysentery.....	42	6,300	63,000
Smallpox.....	35	37	9,000
Diphtheria.....	100	.....	1,800
Tuberculosis....	1,000	.....	9,500
Pneumonia....	41,000	6,000	36,000
Miscellaneous...	3,700	15,000	34,000

The high rate of loss from pneumonia is attributed to the epidemic of influenza, though it is admitted that the problem of safeguarding against pneumonia has not yet been solved.

## Modern Dentistry Attacked

*Joseph M. Levy, D.D.S., New York City, Denounces His Own Profession.*

New York, Sept. 26.—“Eliminate the dentist. He was a mistake from the beginning. In answer to the question of what to expect from him, I urge you to expect nothing. Look upon him with suspicion.

“It is not the fault of the dentist, but the fault of his training. He has been fitted to be a jeweler and worker in metals, when he needs to be a member of the medical profession with a specialist’s knowledge of the teeth.”

This opinion was delivered yesterday by Joseph M. Levy, D.D.S., before the session of the International Conference of Women Physicians, at National Y. W. C. A. Headquarters, No. 600 Lexington Avenue, and was received with great applause by the women medics.

“The duties of the dentist are twofold,” continued Dr. Levy. “First, the prevention of local infection and the preservation of the dental arch and its contents; and second, the elimination of infection when discovered.

“The dentist falls down grievously in his duties regarding infection. Asepsis is frequently discussed, but seldom practiced. The President of the Dental Society of the State of New York says that the universal adoption of aseptic dentistry is an ‘iridescent dream,’ too expensive to be possible. A dentist’s hands are usually clean—his instruments are usually boiled. Further than that, he seems to feel little responsibility.

“How many dental operations are performed merely on the hope that everything is O. K.? Dentists have a habit of arriving at diagnosis by the sense of smell. If a tooth smells sweet, it is all right, they will tell you.

“There is a rage going over this country for extracting teeth. More teeth are being needlessly extracted today than are receiving any other attention. Any tooth which is questioned is summarily extracted, and its owner is deprived of his normal apparatus for no cause.

“There is only one right operation for any given trouble. If you are a surgeon who charges \$100 for an appendix operation, do you snip off one-fifth of the appendix for a patient who can afford to pay only \$20? Many dentists are doing just that thing. They give service in accordance with the size of the fee which they can charge their patient. The canker of commercialism is eating at the heart of the dental profession in this country and in Europe as well.

“There are very few dental colleges in the United States today worthy of respect, because 60 per cent. of the dental colleges are privately owned and run for private profit. They manufacture dentists by the wholesale. The dental examiners are elected from the body of dentists, so there is no chance of improvement from within. Unless the medical profession steps in and insists on a reform, the condition will not improve.”

## Dr. Levy Answered

New York, Oct. 10.—That the dentists of the country were done an injustice by a recent statement of Dr. Joseph M. Levy before the international conference of women physicians is the opinion of William Rosenbaum, a doctor of dental surgery, of No. 219 West Eighty-sixth street.

Dr. Levy declared that dentists were artisans and money mad and that commercialism is eating at the dental industry. Dr. Rosenbaum refutes these statements and points out the great strides that have been made in dentistry of late years.

After a consultation with prominent practitioners, Dr. Rosenbaum makes the following denial of Dr. Levy’s statement:

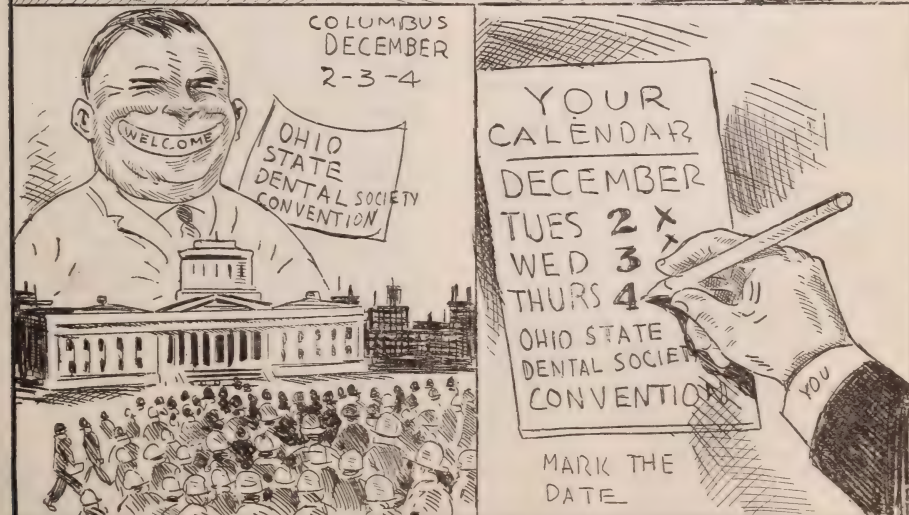
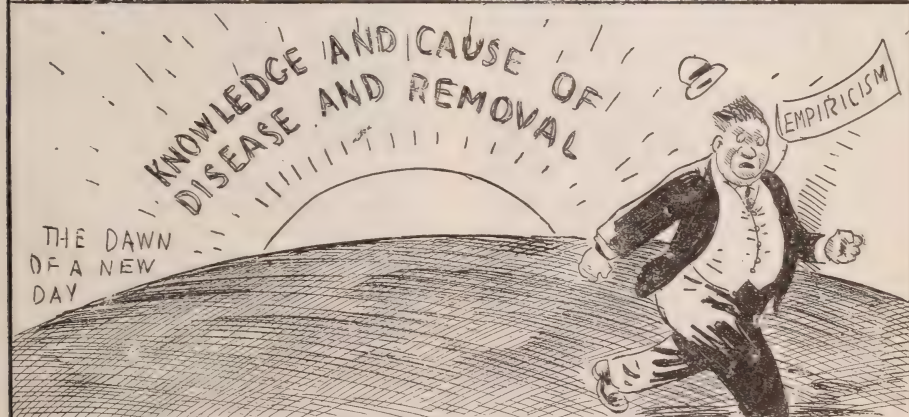
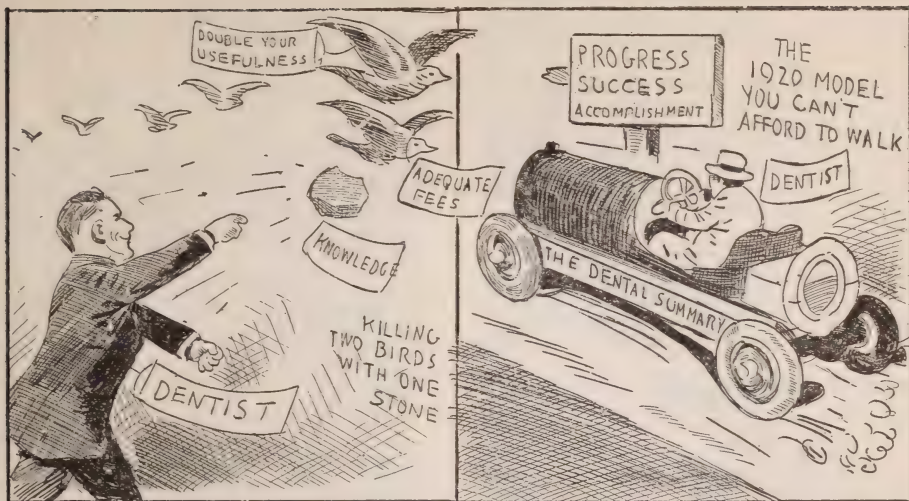
“The article on dentistry published on Saturday, September 27, 1919, has created quite an uproar in the profession.

“I have been in consultation with many of the most prominent practitioners with reference to same and we all feel that this denunciation of the American dentist (being such a drastic, anarchistic and untruthful statement) necessitates as a protection to the standard and welfare of the American dentist an answer, in order that the public will not be wrongfully informed.

“To the contrary, American dentistry has so rapidly advanced that within the last ten years the health and welfare of the laity has so greatly improved from a physiological standpoint that the medical profession has most closely allied itself to our branch of the profession owing to the wonderful benefits derived from the advanced methods of our technic.

“Within the last few years American dentistry has grown to such importance as to uplift the physical development of our laity by restoring and preserving all the energy that the individual is capable of possessing, thus being able to more thoroughly appreciate our existence

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and this is due to the careful development (especially in America) along the lines of thorough asepsis in all its phases, such as the advancement in combating bacterial development at the apices of the roots of teeth, this subject alone having caused great strides in research work along histological lines—also new surgical methods of operation for removal of these infections, such as apicoectomy, alveolectomy, trephining, curetting, suturing, dressing, irrigating, in fact, all kinds of discussion and advancement in every phase of the technic.

"It is true that in all professions you will find some charlatans, but to say of dentists that they are a bad lot generally, and that dental practice is a camouflage, is an injustice discreditable to the effort made in the advancement of this science.

"The colleges have a learned board on their faculty of very capable practitioners, who carefully determine upon examinations of their students and after graduation the State Board also composed of a well represented staff, compel this graduate to pass State examinations before they are allowed to practice. In fact, the care in the passing of an applicant for practice in dentistry is just as drastic as any of the most scientific callings.

"The physical condition of our army was a whole lot due to the care that the dental profession gave our boys, it being one of the important requisites necessary for them to pass before being accepted in the service.

"A little learning is a dangerous thing and it takes a great effort on the part of the average dentist to keep himself abreast with the progress of his profession, in failing to do this he becomes obsessed with the impression that he alone is the only one making progress.

Seventy-two new dentists were licensed to practice at Portland, Ore., during the past year.

### Ohio—Central

Marion, Ohio, Oct. 1.—The Central Ohio Dental society is holding its October meeting at the public library auditorium today.

The session this morning was convened about 11 o'clock, O. M. Young, the president, presiding.

After the reading of the minutes, F. R. Mann, the corresponding secretary, gave his report and also read the names of the members of the Central Ohio society who served as army dentists during the recent war. They were: Major H. E. Albaugh, of this city, who is in the regular army; Lieutenant O. G. Stephenson, of this city; Captain F. C. Feyler, of Richwood; Captain J. C. Thuma, of LaRue; Lieutenant R. C. Bratton, of Galion, and Lieutenant L. T. McKinney, of Richwood. Captain W. E. Knight, of Delaware, served with the army Red Cross.

F. C. McGaughy, of Galion, gave the treasurer's report.

During the war an automobile was purchased for the use of the dentists at Camp Sherman. After it was paid for a surplus remained and

today a refund was made to the members of the society of a dollar each.

The afternoon session opened with a paper on "Exodontia," by D. P. Snyder, of Columbus.

The principle address of the afternoon was by William E. Knight, of Delaware, who spoke on "Year's Service Overseas with the Red Cross."

O. M. Young gave a clinical paper on "Gleanings from the paper of Dr. House" and F. R. Mann, a clinical paper on "Thoughts and Clinic Taken from the paper of Dr. Furnas, given at the Northern Ohio meeting."

### Ohio—Corydon-Palmer

Youngstown, Ohio, Oct. 3.—Joseph T. Williamson, East Liverpool, was elected recording secretary of the Corydon-Palmer Dental society at the fall meeting of the organization, Thursday.

Other officers chosen at the meet were, J. F. Steel, Lisbon, president; T. J. Evans and J. H. Chessrown, Youngstown, and G. L. Moore Girard, vice-presidents; and W. B. Challis, Lisbon, corresponding secretary.

Addresses on technical subjects were delivered by Hamlin Barnes, Wellsville; Lee W. Atkinson, Salem and C. H. Hebble, Columbus.

Dentists of Columbiana, Mahoning and Trumbull counties are affiliated with the organization.

### Michigan—Seventh District

Port Huron, Mich., Oct. 2.—The organization of a clinic club was perfected last evening at a meeting of the Seventh District Dental society, held at the Chamber of Commerce. The club was formed for the advancement of dental work and a study of different phases of this science will be made. Discussion of topics relating to dentistry and papers on these subjects will be placed on the winter's program.

### Indiana—Northern

Muncie, Ind., Sept. 12.—The Northern Indiana Dental Society, which closed a two-day session here Thursday night, agreed to meet at Marion next year. Officers elected were:

Lew W. Dailey, of Bluffton, president; W. S. Walter, of West Lafayette, vice-president; A. L. Harter, of Kokomo, secretary; C. A. Nixon, of Valparaiso, treasurer; F. B. Garner, of Muncie, registrar; H. W. Hiatt and Charles A. Priest, both of Marion, superintendents of clinics.

The meeting was featured by lectures and clinics. Dr. Thomas B. Hartzell, head of the department of research, of the University of Minnesota, lectured on "When to Conserve and When to Extract Human Teeth," and "Heart, Kidney and Joint in Relation to Mouth Infection."

### Ohio—Tri-County

Zanesville, Ohio, Sept. 13.—The Tri-county Dental association at a meeting in Coshocton, Thursday decided to hold the next session in Zanesville, the second Thursday in January. The following officers were elected for the

## THE DENTAL SUMMARY

coming year: P. F. Walker, Coshocton, president; A. W. Boyd, Cambridge, first vice-president; T. E. Axline, Zanesville, second vice-president; J. A. Honabaugh, Warsaw, secretary; H. J. Boyd, Cambridge, treasurer.

### Interstate Anesthetists

Cincinnati, Sept. 17.—The final session of the Interstate Association of Anesthetists, which has been meeting in conjunction with the American Association of Obstetricians and Gynecologists, at the Hotel Gibson this week, was confined to anesthesia for oral surgery and dentistry.

One of the most important papers read was by C. H. Burmeister, Cincinnati dentist, on "General Anesthetics for Intraoral Operations."

Bion R. East, of Detroit, who became famous for his plastic surgery during the war when he molded new faces for soldiers whose original ones had been shot away, spoke on the "Possibilities and Limitations of Local Anesthesia for Oral Surgery."

"Somnoform, a Neglected Anesthetic for Oral Surgery," was the topic of the paper read by Oel E. Lanphear, of Kalamazoo, Mich.

Isabelle C. Herb, of Sunbury, Pa., known throughout the United States as the dean of the women anesthetists, spoke on "Postoperative Lung Complications With Special Reference to Oral Procedures." Dr. Herb in conjunction with Dr. Dixon worked out the method

of "drop anesthesia," which has been adopted by the Mayo brothers of Rochester, Minn. Dr. Herb instructed thousands of women in administering anesthetics during the war.

### Kansas—Leavenworth County

Leavenworth, Kan., Oct. 5.—The Leavenworth County Dental Society, met Friday evening, when the following officers were elected for the ensuing year:

President, W. B. Meyers; vice-president, V. A. Shoop; secretary and treasurer, C. W. Mullen.

The question of dental inspection of schools was brought before the meeting. No final action was taken, but a committee was appointed to meet with the Board of Education, to arrange or decide the manner in which the dental inspection is to be conducted through the schools. A law passed by the last legislature makes it compulsory to have dental inspection in the schools.

### A Drive at Undesirables

New York, Sept. 14.—A campaign of education of the public was launched this month by the New York League for the promotion of better dentistry.

The League was formed last week, when a meeting of representatives of local organizations was held and the smaller organizations were consolidated into the city-wide league. The officers elected were: Abraham H. Rosenbaum, of Manhattan, chairman; Herman Ausubel, chairman of the Williamsburg League, secretary; A. M. Brand, of the Bronx, treasurer. Resolutions were adopted for the League to devote itself to the education of the public of unethical practices in the profession.

"There are quacks and no-accounts among the dentists as well as in other lines of endeavor," Dr. Ausubel said. "The general public does not know about them, and are easily imposed on. One of the objects of our organization is to get the public wise to the quacks, and so take away their ability to do further harm."

### Tennessee—Memphis

Memphis, Tenn., Sept. 19.—The first meeting of the Memphis Dental Society this season was held last night with a large attendance.

The essayist of the evening was John J. Ogden, who delivered an interesting lecture illustrated by stereopticon slides on the subject of mouth surgery, including the latest splint for fractured jaws.

E. F. Simpson, president of the society, was chairman of the meeting.

The meetings of the society are held the third Thursday in each month.

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## THE DENTAL SUMMARY

### Colorado State Board

The Colorado State Board of Dental Examiners will hold their regular semi-annual examination for Dentist and Dental Hygienists, on December 2nd, 1919. Applicants for Dental Hygienists license must be graduates of some institution giving a Dental Hygienists course. For further information address, R. C. Quick, D.D.S., 310 Metropolitan Building, Denver, Colorado.

### Nebraska—Southwest

Holdrege, Neb., Sept. 18.—The annual meeting occurred here today, with the largest attendance in the history of the society. The following officers were elected for the ensuing year: H. R. Bellville, president; R. G. Phelps, vice-president; E. W. Parmalee, secretary; J. D. Hamilton, treasurer.

### Y. M. C. A. Mechanical Dental School Changes

To centralize its direction, the School of Mechanical Dentistry heretofore located at 25 West 45th street, New York City, has been moved to new quarters on the third floor of the West Side Y. M. C. A. building, at 318 West 57th street.

The school recently added an exclusive new process known as porcelain inlay, the invention of Dr. Weldon, which is being demonstrated to dentists as well as taught to students. The school has been recognized by the Federal Board of Vocational Education and wounded

soldiers are being assigned to the school for training. Aside from these there were twenty-one men enrolled during September; there are several women students also.

Albert E. Eichholz has been made principal of the School for Mechanical Dentistry, succeeding F. Moran Babcock.

### Alabama—South

At Greenville, Ala., on September 12, a new dental society was organized, to be known as The South Alabama Dental Association, including Butler, Covington, Crenshaw, Conecuh, Escambia and a part of Lowndes counties. The newly-formed association will affiliate with the Alabama Dental association and its members will be greatly benefited through cooperation at each of its meetings, which will be held quarterly.

The following officers were elected: President, Gadlin of Andalusia; first vice-president, G. F. Petrie, of Florala; second vice-president, Dr. Hartley, of Georgiana; secretary and treasurer, H. H. Kendrick, of Evergreen; press editor, McDonald of Evergreen; chairman of programme committee, T. E. Green, of Greenville.

### New York—Tri-County

Olean, N. Y., Sept. 22.—The Tri-County Dental Society of Cattaraugus, Allegany and Stuben Counties held a meeting at Hornell, Saturday. A large number of dentists attended the meeting. Papers were read and clinics held on use of the X-ray in dentistry.

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## THE DENTAL SUMMARY

The following officers were elected: B. H. Eddy, Olean, N. Y., president; M. B. Cotterell, Hornell, N. Y., vice-president; William Spearger, Wellsville, N. Y., secretary and treasurer. The next meeting will be held in Olean.

### Oral Hygiene Course for Women at Minnesota University

Minneapolis, Sept. 21.—A new course in the school of dentistry, University of Minnesota, which will mean the opening of a specialized field in dentistry for women, is now in operation. The course is known as the school for dental hygienists, offers the most complete course in dental hygiene that can be obtained.

Young women who attend the course will be taught the principles of cleaning teeth and of oral hygiene to fit them for positions in school and municipal clinics and dental offices where the dentist requires someone to supplement his work in dentistry.

The course will consist of two years of work and will lead to a degree of graduate dental hygienist. The first four months work will be in the school for nurses. In the second year the student's work will be largely clinical. She will practice in the dental infirmary.

### DEATHS

At St. Mary's hospital, Madison, Wis., October 8, Dr. O. C. Schmedeman, aged 40.

At Havre, France, late in September, Dr. Newell Sill Jenkins, aged 78. During his career he had practiced forty years in Ger-

many, and five in France, and is credited with being the inventor of the porcelain method of filling teeth.

At Boston, Mass., September 29, Dr. George H. Payne, aged 51.

At Nashville, Tenn., October 1, Dr. George Oman Walton, aged about 40.

At Sistersville, W. Va., October 4, of spinal meningitis, Dr. V. N. Jones.

At Olean, N. Y., October 4, Dr. William H. Cord, aged 30. He was a graduate from Buffalo University, in 1911, where he had achieved fame in athletics.

At Syracuse, N. Y., September 22, Dr. Samuel W. Falley, aged 59.

At Akron, Ohio, September 19, of neuritis, Dr. Bert H. Dreutlein, aged 41.

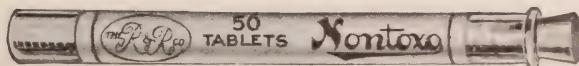
At Kalamazoo, Mich., October 8, Dr. Charles M. Carpenter, aged 61.

At New York City, September 19, of acute indigestion, Dr. Everett David Atwell, aged 68.

At Brooklyn, N. Y., September 18, of heart trouble, Dr. T. Joseph Spaulding, aged 39.

New York, Sept. 15.—Dr. Charles Christopher Voelker, formerly a practicing dentist in Brooklyn, and later professor of Clinic Dentistry University of Pennsylvania, at Philadelphia, died in a hospital at Trenton, N. J., Saturday night of heart trouble. He had been in ill health for about two years, due to overstudy. He was secretary of the Second District Dental Society and a frequent contributor to the Dental journals, being particularly interested in the use of silicates in dentistry.

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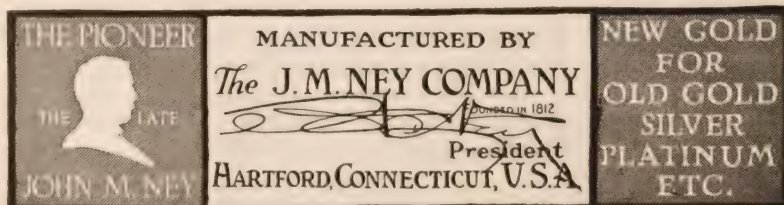
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# REGULAR CONTRIBUTIONS

## THE DENTAL SUMMARY THE MAGAZINE THAT HELPS

Vol. XXXIX

December, 1919

No. 12

### THE IMPORTANCE AND SCOPE OF PARTIAL DENTURE PROSTHESIS\*

BY F. EWING ROACH, D.D.S., CHICAGO, ILL.

**A**T THE CLOSE of our lecture yesterday, we were at the point of taking the impression of the cuspid tooth for a mesial-distal grip clasp. Before taking up the detailed technic of taking this impression, I want to refer briefly to a few of the fundamental principles underlying the various types of clasps that we make and the combination cast and wire form of clasps. First, let us study for a moment the mesial-distal clasp. What do we mean by a mesial-distal clasp? The mesial-distal clasp is that form of clasp that grips the tooth on both the mesial and distal surfaces of the tooth, passing around from the mesial and distal surfaces over the lingual surface so that in reality it is a mesial-lingual-distal clasp, for the reason that we never have occasion to extend these clasps from the mesial and distal surfaces around either the labial or buccal surfaces. They are always covering the lingual.

As we told you yesterday, the mesial-distal grip principle is, we believe, a new principle of clasp construction. We have been in the habit of making clasps that grip the tooth bucco-lingually and, as a matter of fact, the large majority of clasps have been made on the molars and bicuspid teeth for the reason that the molar and bicuspid teeth are the ones that afford, by reason of their form and their location, the most nearly ideal teeth to which we can make attachments on the clasp principle. The application of clasps to the anterior teeth, cuspids, incisors, etc., upper or lower, has not generally been considered successful and has not generally been successful, so that we make this application, then, of the clasp particularly and especially to the anterior teeth.

In the application of this clasp to the anterior teeth, it becomes necessary in almost all cases to make some preparation of the tooth. If necessary, we must remove some of the surface of the tooth, the proximal surfaces in order to shape the tooth properly for the removal and placement of the appliance.

\*The second of two lectures delivered before the Post-graduate meeting of the Kansas State Dental Society, April, 1919.



That is what we mean by the mesial-distal grip clasp as illustrated here. We apply the mesial-distal grip principle in clasp construction in another way, by the combination of the casting and the elastic wire. We employ this same principle of grasping the tooth mesially and distally but we avoid the removal of the contact surfaces of the tooth by employing this embrasure hook as indicated in this chart.

This represents our casting, the casting extending around the distal and labial part way, covering the entire lingual surface of the tooth as in the case of a lower, which is almost invariably possible. In the case of the uppers frequently the occlusion will not permit, so where the occlusion is close we cut a way the lingual surface, but wherever possible it is preferable that we cover the entire lingual plate and we attach this wire that passes up from the lingual wall united with the casting, over the incisal into the labial embrasure between those teeth.

Now, then, why do we use this combination? As I say, why do we use this variation in the mesial-distal principle? This is a mesial-distal grip the same as this. The variation in the two forms of clasp is that we do not need to cut away between these teeth and remove the contact point to make room for the clasp to pass between the teeth.

By the use, then, of the embrasure hook soldered to our casting, we take advantage of that feature. In addition to this advantage, in the anterior teeth or in any of those teeth that are located where they will be at all conspicuous it is an advantage to use this embrasure hook; also in bicuspid in many cases and particularly in the lower bicuspid, remembering that the lower bicuspid usually is a tooth in normal form that is more constricted gingivally, the greatest dimension of the tooth being nearer the occlusal surface; consequently these teeth are not favorable in many instances for making the all-cast clasp. The all-cast clasp, or solid clasp of the bucco-lingual contour type, is too rigid in many cases, the lower bicuspid being rather small and so bell-shaped that our clasp will not pass over the bell of the tooth so that in order that we may have a clasp that is more flexible, that will open wider and permit of a wider range of adjustment, we use this combination.

That long finger will permit of a free spring of the clasp around the distal so it will pass over the bell and then will settle itself, and the finger of the embrasure hook will take hold and it will grasp the tooth firmly. Now another decided advantage in the bicuspid region, particularly of this combination of the embrasure hook and the cast lingual portions, is that you have a clasp that is very much less conspicuous, and very much less objectionable from that viewpoint.

We don't show here the labial or the buccal portions of this tooth, but you can appreciate what that would be by the one we have here, the double embrasure hook. We have two of the embrasure hooks. The object of that is that in its application it will have a still further

range of flexibility than the combination of the cast clasp and the single hook, so that in very bell-shaped teeth we use the double hook.

Now take this illustration and assume that we were going to clasp the bicuspid, an upper second or first bicuspid. It would be very unsightly to put a bucco-lingual contour clasp or one that enveloped the entire labial surface and extended around as would be the case in such a clasp. They are very conspicuous. By the employment of this embrasure hook principle you have a clasp that is a very efficient clasp with the minimum display of gold, so that is the reason for the employment of this type of clasp construction.

This embrasure grip form of clasp has a wide range of application. I know of no form of clasp that has been of greater service, of more general usefulness in a large number of what we might call difficult cases. For instance, we may have a case with the teeth all out on one side of the mouth, assuming for illustration, that the teeth are all out back of the cuspid on one side, and we have a good sound cuspid or it may be a crowned one or whatever the condition may be; we will assume that the teeth on the other side are all intact, normal occlusion and good, sound teeth that don't require repair, inlays or fillings, with normal contacts. That case is very puzzling as a rule as to what is the best way of anchoring that appliance.

In such a case I would make the mesial-distal grip clasp and then run a bar, in the case of the upper, to the opposite side of the mouth and then place two of these embrasure hooks up over the occlusal and into the embrasure of some tooth, usually back as far as the second bicuspid or third molar.

Now the fact that you have there those claw-like fingers that pass in over that tooth and grip it in a vertical direction, gives you a form of clasp that will assist in maintaining the relation, the apposition of your saddle on the other side as an aid to the clasp that you may have on the cuspid with the least amount of mutilation of any way that I know of.

I use this form of clasp a great deal in supplying any number, one, two, three or four of the incisors. Let us assume that we have one or two incisors out—they may be interrupted spaces or all from one space—but assuming, as an illustration, we have lost the lateral incisors, which is a very common condition, the centrals and cuspids are sound teeth. By casting a lingual plate to those remaining teeth and attaching to the distal surface of that plate a pair, one on each side on the distal surface of the cuspid, you can make a very secure, neat appliance without mutilation, in many cases without touching the teeth at all; so that this, to my mind, is a very valuable form of clasp. It is what we call the mesial-distal grip principle employing the embrasure hook.

Now the bucco-lingual contour grip type of clasp, we usually make of a solid ring type of casting such as is indicated in this chart. That is a simple clasp to make and there is nothing particularly that we need to



say about it. We gave the technic yesterday of taking the impression, and saw that the casting of this clasp, after you have your model, is a very simple procedure and will yield a clasp the equal of which I have no knowledge.

#### TAKING THE IMPRESSION

Now then, we come to the most difficult step, the most difficult part of this whole system, if we may call it a system, of clasp construction: Taking the impression of a cuspid tooth where we have adjacent teeth present.

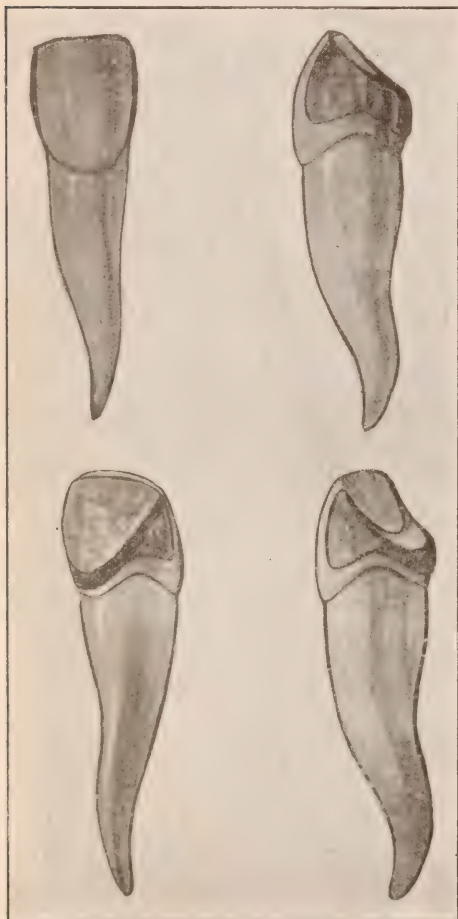


Fig. 1

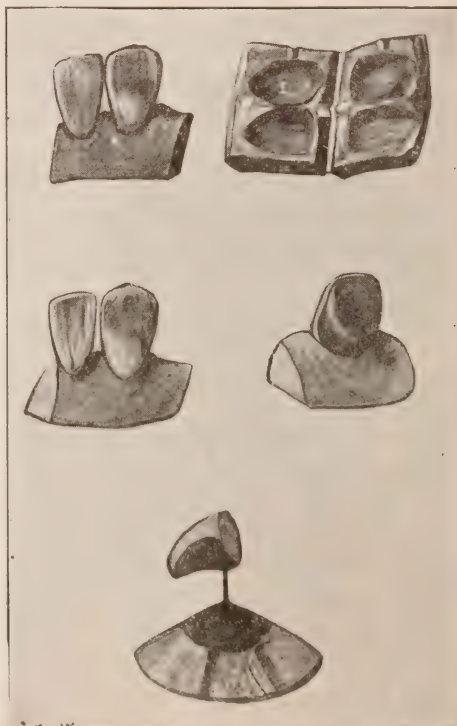


Fig. 2

Fig. 1—Mesio-distal grip clasp, showing two forms; a and b show labial and lingual view of clasp as made when occlusion will permit; c and d show modified forms for close bite.

Fig. 2—a, Model of cuspid and lateral in normal contact; b shows contact removed as prepared for mesio-distal grip clasp; c, sectional modeling compound impression; d, tooth waxed up; e, excess of model cut away and pattern mounted ready for investing.

We have here, just as an illustration, an impression or model showing the cuspid and lateral incisor. They are diagrammatic drawings made by an artist so you have to make allowance for the incongruities. This is supposed to represent a cuspid tooth in normal contact. My artist neglected to make this part of the model which is supposed to represent the tooth after the tooth is prepared, and I hadn't time to get that correction, so you will have to imagine that this tooth is cut away, the contour relieved in order to make a space between those teeth for our clasp. The clasp must have room to pass between the teeth. If you have normal contact you will have to cut away enough to make the space to accommodate your clasp. That is easily done, taking a lightning disc and cutting through, polishing and smoothing the surface so you have a highly-polished enamel.

Don't get a wrong impression. You needn't cut anything like through the enamel of these teeth to make this preparation. It is only a slight amount. In many cases the spaces already are large enough because of the loss of the adjacent teeth, so that we have a space; but if we have not sufficient space we do not hesitate to cut through and polish the surface. Unless you cut through the enamel there is no danger particularly. We never hesitate to make this preparation. This one clasp, to my mind, is one of the most valuable things that I have to present to you.

If you get the technic, will master the technic, the preparation of these teeth and making the impression and making this type of clasp, it is a most ideal attachment on the cuspids, or the incisors for that matter, with the minimum amount of destruction of the tooth. They are remarkably efficient, hold very securely and are not conspicuous as they appear in the mouth. They look as though they were gold inlays, if they are fitted and dressed down and fit snugly.

The greatest trouble that we are confronted with in the making of this clasp is to get it made properly. In order to have this type of clasp that will be efficient we must have an accurate impression of that tooth. How are we going to get that impression? We have cut away this contact point; we have opened up the space between these teeth, dressed down the other side of this tooth until we have straightened the contact surface of that tooth, practically paralleled those teeth. Do it with your eye; you can see by looking at it if you have those flattened surfaces.

The difficult part of this whole proposition, as I said, is making the preparation and securing an accurate impression of the proximal surfaces between these two teeth. This thin septum, thin fragment of material that occupies that space, is so liable to breakage even in modelling compound that you must be very careful or you will break it. I have tried all kinds of ways of getting this impression and I have had a great many of our best operators try to take this impression or to follow the technic that I am going to outline, and they have lots of trouble with it at first;



and I promise you that you will have plenty of trouble in taking this impression, even though I give you the technic in detail. I hope you will not be discouraged and will stick to it and master it, because it is worth while. I feel that it is absolutely necessary to take these impressions in modelling compound. I don't believe it is practical to use any other material. It may be done with gutta percha and you are less liable to break this septum than with modelling compound, but modelling compound will serve the purpose admirably and we recommend it for this purpose.

We must take this impression in sections, taking the lingual half first. We take a mass of modelling compound as large as the first joint of your little finger. I am spending a good deal of time emphasizing the details of this because I know the habits and the disposition of most of us is to take too much modelling compound and cover up the entire field of operation. Just take this small amount and get this bit of modelling compound into the proper consistency. I maintain that it is practically impossible to take this impression with the mass in a uniformly-plastic condition. The plasticity of that material must be of a variable



Fig. 3

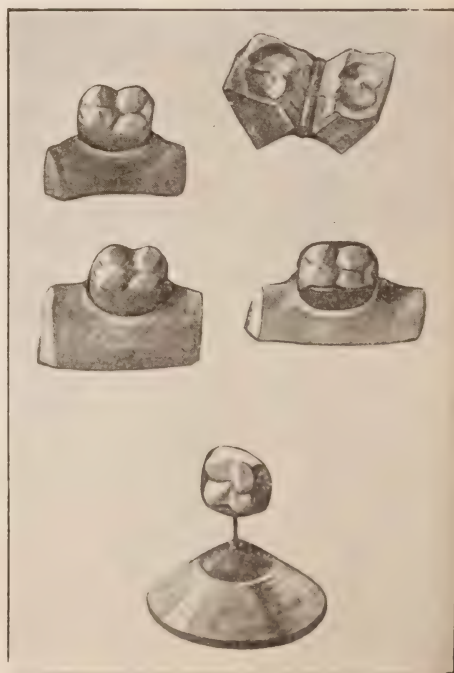


Fig. 4

Fig. 3—Embrasure grip clasp. a, original; b, complaster impression, using open end split tray; c, model; d, wax pattern; e, mounted ready for investing.

Fig. 4—Bucco-lingual contour grip clasp. a, original; b, complaster impression, using c closed end split tray; c, model; d, waxed up; e, mounted.

hardness. This must be formed into a cone and the point of the cone warmed until it is very plastic. Have a flame that is a condensed, hot flame to do this work with so that you have your cone shaped into the form that you want and the rest of the mass practically hard. Just before applying it, in taking the impression, blow cold air or dip the base of it into cold water. That acts as a plug and the middle portion will mold that excessively soft material into the space around the surfaces of the tooth.

As the excess is forced in between the teeth and begins to ooze out, have an instrument long enough to reach down and as it oozes through catch it and force it back, holding the lingual part with a finger or thumb and then force this plastic, soft material back into the space.

What we are after there is to get an impression of this tooth just below the planed surface that we have made with our discs, so that we get this slight depression of the concavity of the tooth just below the contact surface. It is just that small depression that we get that when we reproduce it in our clasp, the clasp passes over these two surfaces, slips into this depression and you have a very secure hold upon it.

In many cases this is not necessary. Where we have double or triple abutment attachments we do not require this security of grasp, but where it is desirable, (and many times it is not only desirable but necessary if we are to have a secure anchorage of the clasp), we want to get this depression. By forcing this back into the small space while it is still plastic we cut away the excess that has remained labially. We take a sharp knife and cut away from the labial portion of that the surplus that comes through the space, cutting back to the half-way line from the lingual to the labial surface.

This material that is forced through we force back and it overlaps the round labial surfaces of the tooth. You must cut back that surplus so you will only have one-half the surface, so that the impression can be withdrawn lingually if you are going to get this slight depression below the contact point.

After we have this impression of the lingual we must be careful in taking it off that our material, also the excess that extends around, does not get away from us. We catch it with our fingers and pull it up to the distal surface, force the material into close apposition to that surface of the tooth, leaving a considerable thickness there so that we have a rather broad surface when we have trimmed down our excess, with a sharp, definite outline of the surface of that tooth.

After we remove this, take a sharp knife and trim this off, cut it away so we have a definite, sharp outline to which we are to mold our labial half of the impression so that, having this, we have to repeat the operation on the labial.

It is just as necessary to get a correct impression of the proximal surface of that tooth. Now then, we have cut away the excess so we



can draw the lingual half to the lingual. In order to have the reciprocal bearing our clasp must come around to the labial or it wouldn't have a grasp that would hold. We must have, then, an impression of enough of the labial half of the tooth so that when the clasp is complete it will have a grasp on the labial surface and have the appearance of a gold filling and prevent the displacement of the clasp lingually.

Of course it is necessary, in the manipulation of your modelling compound, after you have cut it and trimmed it and you have a clear view of this lingual half and see that the margins are all in their position, that you have a clean, sharp adaptation to the tooth. If you take an impression of the labial part, take those two halves and put them together and see that those two sharp margins come together without any rounded relations one to the other, you are sure that you have an accurate impression of that tooth.

While taking the labial part of your impression is under cover. If you are sure of the lingual half and you get this in your labial half so they will come together with a definite, sharp adaptation of the labial to the lingual, so your joint will be invisible, you will know you have a correct impression of the tooth. It will be necessary to vaseline this before you take an impression of the labial half.

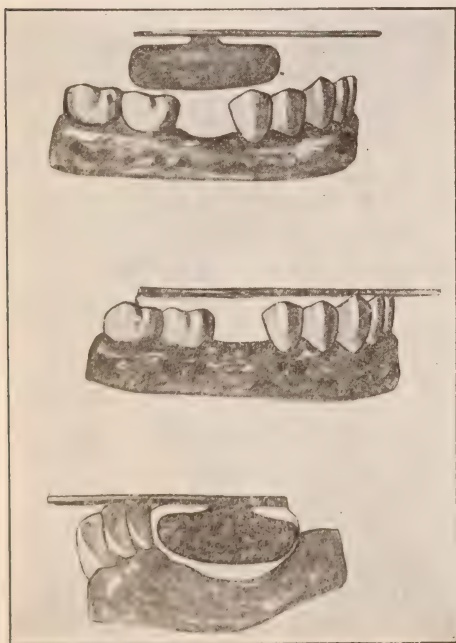


Fig. 5

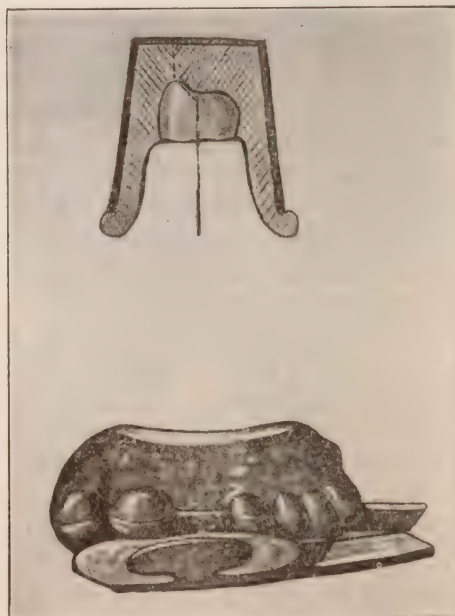


Fig. 6

Fig. 5—Continuous ring clasp.

Fig. 6—Continuous loop clasp on molar and embrasure grip on cuspid.

## REMOVABLE BRIDGES

The next step in the technic is that of making short, double-clasp, double-abutment bridges, removable bridges with clasp abutments, as indicated in this chart. These charts represent the double clasp, double abutment, short span bridges. There are a great many of these cases and there are going to be a great many more of them. We have been in the habit of passing these cases by in a great many instances, believing that we were doing our patients a better service in not doing anything. I know I have, and I believe that most practitioners have. Occasionally we have supplied these short spaces with fixed bridges by inlay abutments and I am sorry to say that some have cut off good, sound teeth and put on mother hubbard crowns and all kinds of abominable things for the sake of putting in a single tooth. I never could get the consent of my conscience to do it. I have put in inlay bridges for the sake of putting in one tooth, in teeth that really require some filling. I never have felt justified in cutting into two good, sound teeth to the extent that was necessary to put in a fixed bridge. I may have done more damage by not doing that than I would have if I had done it, had cut into those teeth to the extent necessary to put in a fixed bridge possibly I have. But, as I say, I never have been able to get the consent of my mind to do that thing. I always have had such a profound respect for a good, sound, human tooth that I hadn't the heart to cut into it for the sake of anchoring a fixed bridge.

I never have been a very enthusiastic fixed-bridge worker anyway. I admit that I may have done many patients a greater damage by letting those cases go by, but regardless of what damage I may have done, or you may have done, the fact remains that there is a great deal of damage being done by leaving these spaces without something to replace the lost tooth.

When it becomes necessary to extract the first lower molar, taking that as an illustration, in a young person's mouth, we are jeopardizing the entire dental arch, the entire mouth by the loss of one or two of the first molars. It is my belief that we are jeopardizing the future of that mouth. Of course, if we get it early enough, in childhood, in infancy when a child is young enough, there may be a drafting and shifting of those teeth to fill that space and a fairly normal occlusion will result. But in the young adult, you know the train of damage that comes from the loss of a tooth or two. Normal occlusion is lost, normal contacts are lost, and then what happens? Pyorrhea, decay and all of the train of damage that occurs from the loss of those teeth, so it is my belief that we should endeavor to supply our patients before the damage occurs with something to maintain the normal relations, and I fully believe that it is possible to make these cases of the clasp type of removable bridge in a way that a proper service may be rendered.



Now, without spending any further time in the argument for the necessity of this type of construction, I believe you will recognize that there are a great many cases of these short spans that should have teeth supplied so that in view of the fact that we accept the necessity, how can we best do this?

It is my belief that it can be done best by means of the cast clasp, casting the clasp and saddle in one piece. If you once get the technic of taking this impression and waxing up and casting these pieces, it is very simple.

It is my belief that the application of this single casting, the casting of the clasp and saddle all in one piece, should be limited to cases of not to exceed two teeth, so that surely for single teeth it is unquestionably a safe procedure.



Fig. 7



Fig. 8

Figs. 7, 8, 9, 10—Showing technic of double clasp short span bridge cast in one piece.  
Fig. 7—*a*, Buccal view of half tray for taking lingual and occlusal half of case; *b*, tray in position; *c*, lingual view of same.  
Fig. 8—*a*, Cross section of tray, showing line of separation; *b*, complete impression.

## CASTING CLASP AND SADDLE IN ONE PIECE

The technic of that is, briefly, taking an impression of the space and the teeth adjacent to the space that we are going to put the clasp on. You can take these impressions in plaster of Paris or complaster with the ordinary crown and bridge tray that envelops the entire surface that you want your appliance to cover, remove your tray and make a longitudinal or mesial-distal incision centrally, and split your impression and remove the two halves from the mouth. You can do that and get reasonably good results.

The objection to that plan of taking the impression is that in making this incision on the occlusal surface you are very likely to mutilate the occlusal surface of the space adjacent to the space where it is most desirable to place your occlusal rest, so it is very important to my mind that we have an accurate impression of the occlusal surface and the surface of that tooth next to the space adjacent to the occlusal surface. We are not very particular about the under-cut in the finished work when we eliminate that, but I would rather have always, in all of this work, an exact impression of these teeth. I like to have in my model an exact reproduction of the conditions in the mouth where I can see just what I am dealing with in the mouth.

If I get an exact, accurate impression of those teeth in that space when I have it out before me, I can more intelligently design my appliance. I can design the outline of the clasp according to the contour of the tooth and I can determine just how much filing of the under-cut is necessary to facilitate the removal and placement of the appliance. It is absolutely necessary to eliminate the under-cut; you cannot have these appliances so that the casting extends in around the under-cut; you cannot get them on and off. It is a short space and your appliance is very rigid. There is no chance to spring or tip it or spring the teeth to get it in or out. It must go in mechanically straight up and down.

If you have a tooth on one side and one on the other, you can take advantage of the tipping and rocking and rotation and you can often trick them in, but can't do them with these. You must secure comparatively parallel relations of the adjacent surfaces.

I have found that the best impressions, the most accurate, are obtainable by taking these impressions in sections. You can take them either with modelling compound or complaster. Assuming, then, that we take them in complaster, it being the easier of the two materials to work with, we take a tray that covers the lingual and occlusal surfaces of these teeth. We don't care anything about the buccal surfaces now. We just want the lingual and occlusal surfaces of these teeth so this represents in a general way the outline of the tray.

That is just a form that I put this material into so I can bend these wings to conform to the curvature and irregularities of the teeth. This material is carried down to here and is forced up against the lingual and



occlusal surfaces of the teeth. Take an instrument with a flat blade and cut away this excess back to the center of the tooth so you can withdraw your impression linguo-occlusally. If you push it out directly, at right angles, you probably will break off part of your impression. But if you withdraw it toward the occlusal and lingual at the same time it always will favor you.

You will have to study your cases, as the moulders express it; study the draw of the case, have the model, and then design your impression or take your impression with reference to the draw so that when you cut away the excess that comes out buccally, it will not interfere with your impression lingually.

The major half of the impression is in the lingual impression. You remove this and trim it off. Soap it or oil it and put it back in position and with a similar tray fit it to it buccally.

We make these models of inlay investment compound the same as for the single cast clasp. We prefer to cast these all in one piece for the reason that we have a double abutment, a clasp at both ends of this

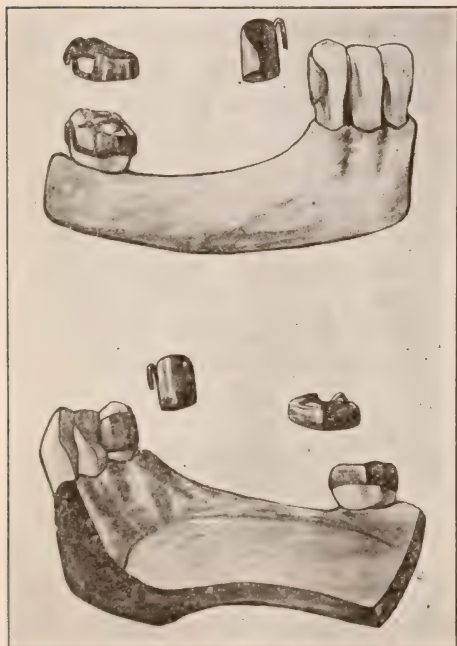


Figure 9

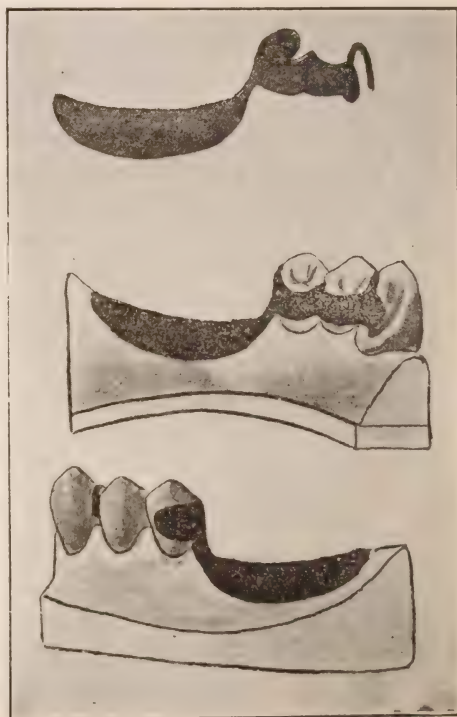


Figure 10

Fig. 9—a, showing model with under-cuts filled in; b, wax pattern; c, ready for investing.

Fig. 10—a, Casting; b, casting with excess gold cut off and tooth ready to be cemented to place.

short space and we are depending largely upon these large, accurate fitting clasps for our masticatory resistance. We are not depending on the saddle. These short bridges that are made where we depend on the saddle area for resistance to the masticatory forces are of but little value, so that the rule should be that in smaller cases where we have small saddles we should have good heavy, large clasps in order that they be of any degree of comfort and usefulness to the patient. Then we are not particularly concerned whether we have that compressed relation of the saddle area in its relation to the clasps. We are going to depend on the clasps largely to carry the load and then, too, it is a very difficult matter to make these casts in sections by casting the saddles and the clasps separately, and then assembling them. You have such a small saddle, working in such close quarters, it is difficult to keep that in place in its proper position while you are taking an impression of the saddle and the clasp, so that in order to simplify the work, make a very much more accurate and better appliance, we make the casting all in one piece, cast it all at one time.

After we have our model, we cut away all the other teeth so that we have only the two teeth that we are going to clasp remaining on the model; we have no use for anything else. We fill in this under-cut. You remember we have an under-cut as we almost always have in these cases, so we must fill that under-cut so that our casting will not interfere with the removal and placement of the appliance. In order that we may fill that and cast over it, it is necessary that we take an instrument and cut a hole in our model of sufficient depth that we can build it up with some of the same material.

I refer to making this under-cut or this hole into your model, digging out so that when you place this addition it will be mechanically retained in position; otherwise, when you dry out your cast, this piece of investment compound is very liable to fall out of place unless it is mechanically retained in its position. In order to make sure, we dig a hole and then plaster up and parallel these proximating surfaces, at least if you want to be real sure, make the relation so they diverge rather than converge from the gingiva. We wax that so that we have the clasp on the bicuspids and the saddle and the clasp on the molar all in one continuous pattern.

In order to take advantage of gravity in casting, I know some say that this is not necessary, that you can cast up-hill as well as down, but I believe a good deal in the force of gravity, and I believe in all cases the wax pattern should be below the sprue attachment and I have been casting full plates and all kinds of plates and saddles with one sprue and with a very uniform success by taking advantage of gravity with a very simple device. There is no need of complicated machinery; no need of complicating this work. I am trying to make this work as simple as possible, to simplify the equipment, and I know that many will laugh



at the outfit we are using but I am willing to take a chance on the results that we will get.

In order to take advantage of that principle of gravity I extend the wax entirely around the molar and make a complete ring around the molar and attach the sprue at this point. That makes a complete ring around the molar so we saw off the casting at this point which gives us an open ring type of clasp. That is merely done to facilitate the casting. We can just as well cast the base for our crown at the same time, wax up and fit in the crown, casting the base for the crown and the whole appliance so that all you have to do is cement your crown on and it is finished. It is a very simple, direct, accurate means of making these small bridges.

#### UNILATERAL CASES

We come now to the unilateral cases. Unilateral appliances have been, and always will be, probably, questionable appliances. I feel quite sure that there is a large per cent. of these cases that may be done very successfully by means of these cast clasps, securing them, anchoring them to two or three teeth with the cast clasp.

There are just a few principles that I would like to refer to in the selection of cases for unilateral construction. You understand what we mean by unilateral casts, those casts having the teeth out on one side

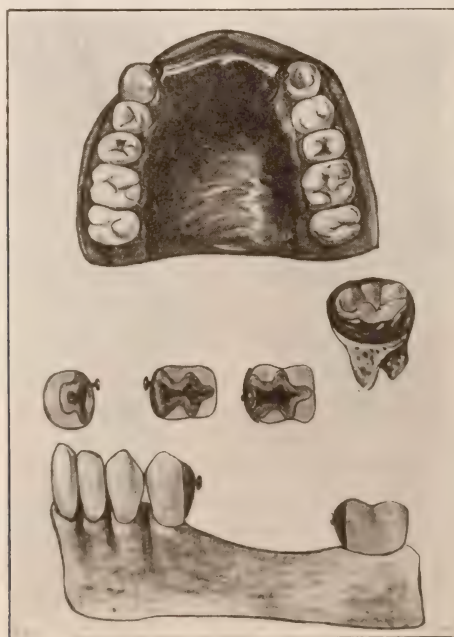


Figure 11

Fig. 11—Unilateral case anchored with double cast clasp and embrasure grip.

only, requiring no repair on the opposite side of the mouth. The cases favorable to unilateral construction are those having large, well-defined, fully-absorbed alveolar ridges with good strong teeth to which we are going to make our clasps. The short bite is another favorable condition, so if we have those conditions present, and particularly if it be a lower—the lower may be considered a more favorable location than the upper, though in many cases I'd as soon put it in the upper because we don't place much value on the advantage of gravity working against us in the upper, so I don't consider this much of a factor—it is safe to use this appliance.

You must have firm support of your saddle or you will have a very severe leverage on the teeth to which you attach your appliance. Be careful in the selection of your cases and then, too, I would suggest that you minimize the number of teeth that you put onto the appliance. If I had a case with the three molars gone, I would prefer not to supply the three molars; I would supply one or two, preferably one. I would rather have one tooth giving good, comfortable service than to have three teeth doing indifferent service and damaging the teeth to which they are anchored.

The technic of construction of these casts is a little different from the double abutment cast for the reason that it is necessary in making these cases to secure that compressed relation of your saddle and your clasps, and it also is necessary to include two or more teeth in clasping and then, as I say, we get that compressed relation of the saddle to the clasp. In order to get this compressed relation it is not practicable to take this impression of the ridge and the teeth and cast the saddle and clasp all at one time. A better plan is to take an impression of the teeth you are going to clasp and make your clasp; take a separate impression of the ridge and make your saddle, and then put your saddle in place and your clasp in place and take an impression of this saddle under pressure.

We have had very many suggestions of how to secure this compressed relation. One is to use an ordinary orange-wood stick or a piece of wood between the antagonizing tooth and the saddle, placing this piece of wood in the mouth and having the patient close on it and depending on the patient, or holding the saddle in position down inside with an instrument. I have found that any time I depend on the patient to do anything for me I get badly fooled, so that I have learned to do this myself so that I know what I am doing. I take a piece of aluminum or some piece of metal that I can bend at right angles and place it so that the end of this piece of metal that is turned down will reach down and come in contact with the saddle. The clasp is held securely in position on the teeth and I want to get this compressed relation. The greatest tendency is to get these casts finished up so that you will find, in pressing down on the saddle, it is not in close apposition, and every time the patient bites on that, this thing is springing and pulling and exerting a



terrific leverage on the teeth. We want to get that saddle in apposition to the ridge, so the saddle is carrying the load. We are not going to put them on unless the ridges are of sufficient size and condition to carry the load. By taking a piece of metal we fill in this corner with a bit of plaster of Paris and we grab that with our thumb and finger and hold it there. You are using only a small amount of pressure, and you get an impression of the end of the saddle and a part of your clasp, just enough that you will have a guide to place them in your impression afterward. We are not covering the saddle, we can see all the margin of it and the end of it, and see that it is down in close apposition. We hold it until the plaster sets and then remove it and place them in position, and I have found that the most dependable way of securing this compressed relation of saddle and clasp.

#### BALL AND SOCKET ATTACHMENT

I have had a good many requests that I explain briefly some of the points in regard to the use of the ball and socket attachment. You may wonder why I put up all these charts. I brought them along and put them up for your benefit. Many of you can study these charts and possibly get ideas from seeing the charts. While I am not able to refer to all of these, there are several charts here representing some very new, and to my mind useful ideas in the new form of attachment, particularly the ball and socket attachment and I have been asked to refer to this briefly.

For instance, in the new No. 2 attachment we have as illustrated here, the male and female parts of the attachment. This represents the button or male part of the attachment and this represents the female part or tube part. The difference is that the No. 2 attachment is a flattened button and the female part is a correspondingly-flattened tube with an extension lug or attachment to the denture and a contact spur made in one piece. The difference between this and the old one is that the new one is a more compact attachment. It is not as strong, possibly, but there are many cases where an attachment is required that does not occupy so much space. The primary value of this is, that it is more compact and it is simple of use by eliminating the necessity of soldering. The principal idea and value of the ball and socket principle is to take advantage or to utilize the universal joint principle in connection with those extension saddle cases.

For instance, where we have the teeth all out back of the cuspids. Suppose we have an inlay or crown. I insist no one should use attachments of any kind to teeth that do not require crowns or inlays for the clasp can be used equally successful without the mutilation. Let us limit our attachments to teeth that require crowns or inlays so that the ball and socket attachment, by reason of the fact that it is a swivel, can be used on inlays and crowns with less leverage, less liability of leverage being exerted on the anchored tooth, and you can reduce the leverage

and strain to the anchored tooth with the ball and socket attachments better than any form of attachment, clasps not excepted, and we may use the ball and socket attachment on cases where recent extractions have been made, where we would not dare to use a cast clasp for the reason that if you have a rigid grip on the tooth and a saddle area that is constantly and rapidly changing, you will have a terrific leverage on the tooth, so the ball and socket attachment, if you use the contact spur and take advantage of the range of settling that will obtain on the construction of these cases, you can place these extension saddle cases with the least leverage on the anchored tooth.

If we place that kind of an attachment in the upper jaw and do not include in it this contact spur as an indirect retainer, we will have an appliance that will wiggle up and down like a lamb's tail. In the lower you have gravity, and it is not so necessary, and yet I would rather have my lower cases, extension saddle cases, so they will be continuously and surely in place. I don't like these juggling jobs. In order to have the appliance held securely in place let us put contact spurs on.

Here is the point that I want to make in conjunction with the ball and socket attachment—the Kelley or any ball and socket attachment—any of those types that have a universal joint: If you are going to put them into the extension saddle construction, to obtain the best results and maximum satisfaction, I think some provision should be made for this retainer, to place the button as near the gingiva as possible and place the tubes so that the button will be in the gingival end of the tube permitting the settling. This contact spur will hold the plate up at the heel. Now remember that this contact spur is not bearing any particular load. It is only holding a few pennyweights, just the weight of the plate. The destructive force, the force that does the damage and that is of any consequence, is the force of mastication. That is relieved entirely by the ball and socket so that the strain is exerted upon the saddle. There is no way that I know of that you can put an extension saddle onto a natural tooth and have that tooth freer from strain than you will get with the ball and socket attachment.

I would like to impress upon you, then, the importance of the contact spur and the indispensableness of it in the upper. You can use the contact spur as a means of tightening. Suppose that this case settles and the saddle does not hold up into apposition. By bending this contact spur toward the tooth you are driving that cast up against the tissue and it can be continually adjusted in that way. It is a simple way of tightening the appliances if they are made correctly.

I have a number of models here, some cases showing these various steps of technic of cast-clasp construction. I don't know whether it is feasible to undertake to show them. I don't know what provision we can make to show you these models in order that you may get the object lesson along with the word and chart pictures of what we have



given you. If your officers will arrange for time, if it is your desire that we display these models, I will be very glad to leave them. I will be busy with the class, so it will be impossible for me to explain them and tell you of that as I would like to, but I will leave the models and you can study them and get the object lesson along with what we have given you, and possibly get more out of what we have given you by seeing them.

Maller's Building, Wabash and Madison Streets.

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## UNUNITED FRACTURES OF THE MANDIBLE TREATED BY BONE GRAFT

BY F. J. TAINTER, M.D., ST. CHARLES, MISSOURI

MAJOR, M. C., U. S. ARMY

### PRELIMINARY REPORT\*

**T**HE SEVERE INJURIES OF THE JAW, incurred in the past war, necessitated some formulating and standardizing of treatment. The chronology is rather interesting because economic questions entered somewhat into the manner they were handled, especially in the beginning of the war, when men were scarce and it was necessary to get many back to the front in the shortest possible time.



Fig. 1—Cole's pedicled graft: incision made so that graft can be taken from opposite side of mandible, if necessary; intratracheal anesthesia.

\*Read June, 1919, before the Section on Stomatology, A.M.A., of which THE DENTAL SUMMARY, by special arrangement, is the representative organ for the dental profession.

My observations were made while serving with the British at various hospitals in London, and during a personal experience in the clinic of Messrs. Cole and Bubb, at King George Hospital.

At Croydon, one of the largest jaw hospitals in England, Mr. Colyer shortened the period of convalescence and got most marvelous results by approximating the broken fragments at the expense of occlusion, depending on extractions and artificial dentures to give what I saw to be nearly if not perfect functional results.

Summaries of the results of autogenous bone grafts for defects of the lower jaw, from various operators in the different countries, including 237 of the enemy, reported by Lindemann at Düesseldorf, justified its general use.

The technic was slowly improved, and the percentage of "takes" proportionately arose. Grafts were taken from the rib, tibia and ilium, and osteoperiosteal grafts had their percentage of success.

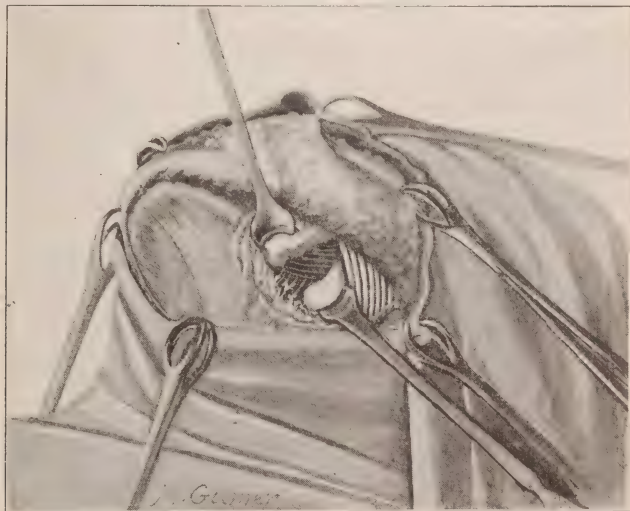


Fig. 2.—Defect in mandible due to loss of bone; fragments immobilized by intra-oral splints (open bite).

Free bone grafts embedded in vascular tissue were conscientiously and deliberately attempted by Imbert and Real to remedy bony defects in the mandible. Such attempts were made with the idea that the graft would be more likely to succeed after its nutrition had been definitely determined by the establishment of fresh vascular connections. They found that if the graft was embedded more than from three to four weeks it so softened that effective fixation could not be attained. In all cases the results as regards bony union were a complete failure.

Mr. Cole, a highly-trained and skilled surgeon, chief of the maxillo-facial department of King George Hospital, maintained from the beginning that the ideal treatment should be applied to the jaw, as well as to other parts of the body, where there was loss of bone. In his extensive



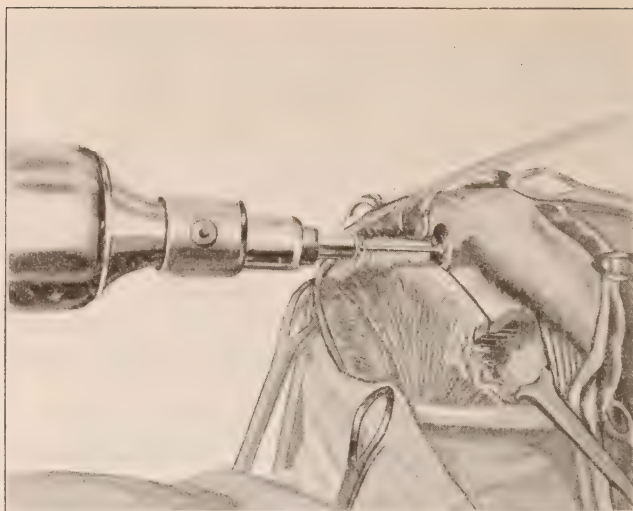


Fig. 3—Cutting graft from lower border of mandible with electric saw, leaving its vascular muscular attachment as pedicle.

experience in the treatment of ununited fractures of the mandible, he developed what is generally known in England and this country as Cole's pedicled bone graft. He has reported<sup>1</sup> thirty-five cases, in nearly all of which I had the pleasure to assist. I had the opportunity, while in his



Fig. 4—Drilling anterior and posterior fragment preparatory to wiring.

<sup>1</sup>Cole, P. P.; *Brit. M. J.* 1:67 (Jan. 18), 1919.

service at the King George Hospital, to do seventeen additional bone grafts, and three at U. S. Army General Hospital, No. 40.

With the exception of a few cases, in which operation was performed just before I left England, the success in practically all was assured. The exact statistics, however, will be published in a later paper, which will include many cases which are awaiting bone graft in my service in General Hospital No. 40.

I have carried out the technic as worked by Mr. Cole, not finding it necessary to vary in the least, and the accompanying illustrations are made after that technic. The nontouch or "knife and fork" surgery, as it has been called, is most scrupulously carried out. A piece of the mandible about a quarter of an inch wide is removed with the electric saw, leaving attached muscle and fascial tissue, which includes the platysma myoides and usually most or all of one or two of the anterior bellies of the digastric muscle. This graft is shifted across the gap and wired firmly to the anterior and posterior fragments.

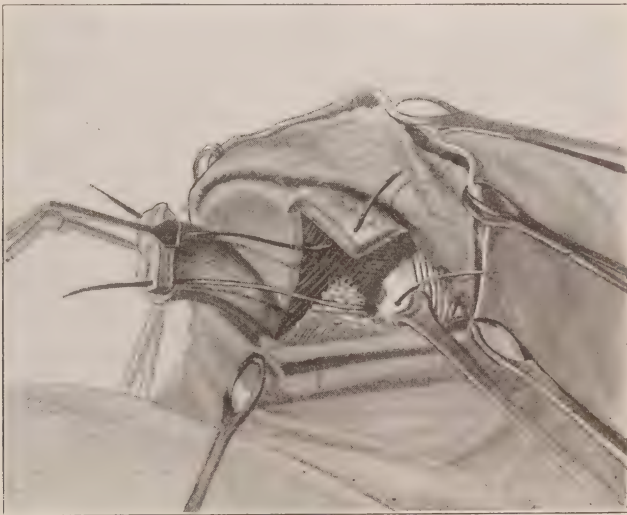


Fig. 5—Wires through fragments and graft; graft held by Cole's forceps.

The graft is very viable and bleeds readily; in one case there was present a spurting vessel from the cut surface of the graft. In exposing the fragments, should the mucous lining of the mouth be opened, it is better to abandon the operation and wait until it closes. However, in one case of mine a salivary fistula resulted which showed that I had opened into the mouth; but it closed in a few days and the graft gave perfect union in the usual length of time.

There was perhaps no other clinic, especially in the beginning of the war, that better appreciated the valuable coordination of dentist and surgeon. Mr. Bubbs, a very keen, skillful and resourceful dentist, had



charge of the dental maxillofacial department of the clinic. The mechanically perfect, though complicated orthodontic splints which have grown out of the valuable teachings of Claud Martin were not adapted to war purposes, when hundreds of jaw cases are treated, and time and lack of mechanics are a factor. The standardized splint was termed by Mr. Bubb a "modified detachable Gunning." The open-bite splint was used universally, and the fractures treated in terms of the upper jaw. Impressions were taken in sections, if need be, and assembled on a proper articulator. The posterior fragment was always most carefully controlled and put in proper relation to the anterior fragment and the upper jaw.

The distinct advantage of the open bite which is appreciated by the surgeon has other things to commend it. Trismus was unknown in patients treated in our clinic.

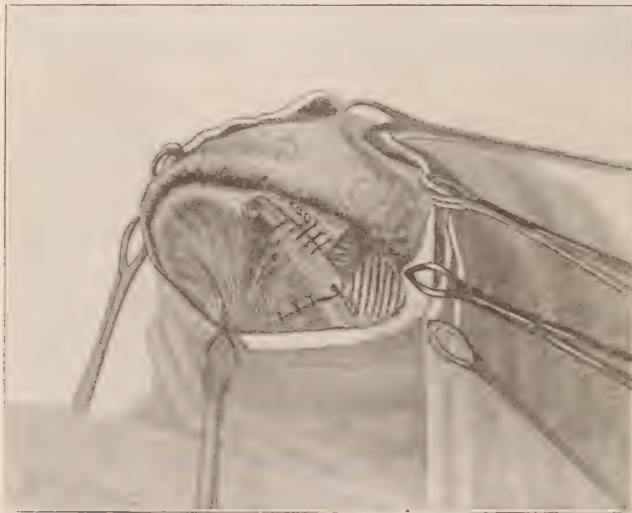


Fig. 6—Graft in place; wires twisted tight and a few catgut sutures placed to obliterate dead space under pedicle.

Plastic operations of the mouth should always be done in the open bite. Extension appliances with intra-oral pads which were always used before any extensive plastic operations, were made detachable, and of wire, so that they could be quickly adjusted with the pliers, a great advantage or improvement over the complicated jackscrews with bolts and nuts to adjust. All plastic reparation was invariably done first, before a bone graft was attempted, a reasonable length of time being allowed to pass for the tissues to clear up from a possible latent infection in the tissues. In some cases the time was materially reduced, as we found that liberties could be taken with the pedicled graft which would not be tolerated with the free graft.

When it was deemed necessary to thicken the walls so as to make a proper bed for the graft, decalcified bone was introduced beneath the skin, after it had been undermined. This worked most admirably. The

process of absorption developed a good fibrous wall which could be used in from four to six weeks. We were struck with the tolerance the tissues had for this foreign body, even after it was put into a septic bed. This was a substitute for the fat graft, and it was soon used exclusively for filling spaces after depressed scars were raised.

In edentulous cases a circumferential wire was used around the body or ramus of the mandible and fastened to the splint. This maintained the proper position of the fragments until the contraction of the muscles was no longer a great factor in misplacements. The wire could usually



Fig. 7—Wound closed with fine horsehair; often a drain is left for twenty-four hours in lower angle of wound.

be removed in several weeks, after which a saddle or gutter appliance attached to the Gunning splint well controlled the fragments.

Intratracheal anesthesia was invariably the choice, in which we were fortunate to have the expert services of Mr. Francis Shipway.

While the roentgen-ray was deceptive in some cases in the determination of the progress of osteogenesis, the marked and uniform difference between a free and pedicled graft proved that the pedicled graft is superior, because it remains a live graft throughout the process of repair and does not absorb as we have noted the free grafts do both in many of our own cases and in those done in France and Switzerland.



## INFECTED FRACTURES OF THE MAXILLAE\*

BY E. P. DAMERON, D.D.S., ST. LOUIS, MO.

CAPTAIN, D. C., U. S. ARMY

**I**N THE BRIEF PERIOD of time allotted for this discussion of infected fractures of the maxillae, I will not enter into a detailed description of them, but will confine the paper to a few observations made in connection with work done at one of our hospitals, at which such cases were received for treatment.

These fractures range from simple fractures to those associated with great loss of bony substance and the enveloping flesh. The treatment of simple fractures requires only approximation of the parts and fixation



Fig. 1

Fig. 1. Case 2—Two sinuses from infection by teeth in line of fracture; five months after injury.



Fig. 2

Fig. 2. Case 2—Five teeth in fracture area.

of the jaws by various means already understood, accompanied by proper care and cleanliness. This is the type of fracture usually dealt with in civil practice, and infection rarely occurs.

Fractures due to gunshot injuries in the war are accompanied with and complicated by projection of bone and tooth fragments into the surrounding soft tissues, loss of bone substance, extreme laceration of the flesh, and the presence of foreign bodies and pus-forming organisms, all open wounds being infected by these organisms.

The early treatment of these cases has been fully outlined previously, such as the work done at dressing stations, and at field, evacuation and

\*Read June, 1919, before the Section on Stomatology, A.M.A., of which THE DENTAL SUMMARY, by special arrangement, is the representative organ for the dental profession.

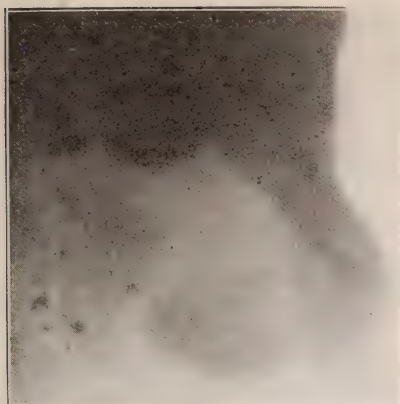


Fig. 3

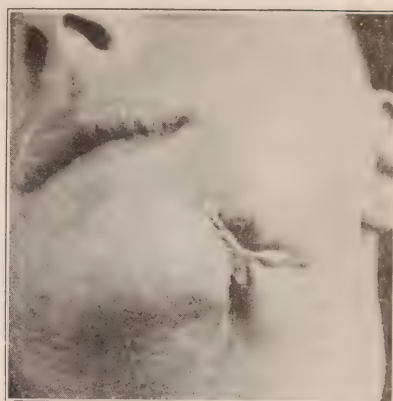


Fig. 4

Fig. 3. Case 2—Teeth removed; union occurring, sinuses healed; after twenty days.

Fig. 4. Case 4—Sinus from injury below mylohyoid ridge; four months after injury.

base hospitals. Those that came under observation and treatment at General Hospital No. 11 had all received some previous treatment but still presented ununited fractures, union having been delayed by infection.

Many of the patients wore excellent dental splints, so that fixation was accomplished. In some, the loss of bone was so great that union was not to be expected (though the amount of bone that forms in some of these cases is surprising), and bone grafting was necessary. Bone grafting too early after healing of the wound is to be avoided, experience here, as elsewhere, having shown that latent infection in closed wounds



Fig. 5

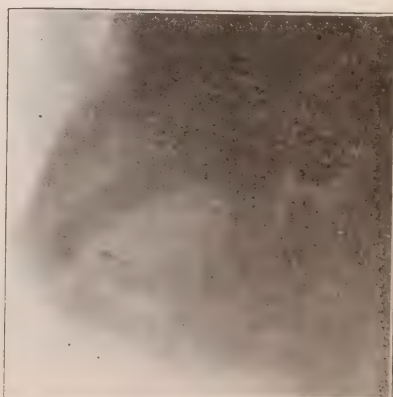


Fig. 6

Fig. 5. Case 4—Bone fragments and second molar the source of infection.

Fig. 6. Case 4—Union occurring following removal of sequestrums and tooth; after thirty days.



is exceedingly likely to be violently aroused, and the graft lost. A large percentage of the cases presented sinuses, external and internal, and required frequent dressing and irrigation with either physiologic sodium chlorid solution or surgical solution of chlorinated soda (Dakin's solution).

In this connection, the following appears in a recent number of *Review of War Surgery and Medicine*:

It is stated by Groves that the probability of latent infection, and the length of the duration in any given case, are in proportion to the extent of the primary wound and its degree of infection; the amount of scar tissue deposited between the tissues; the length of time during which manifest infection is known to have been present, and the extent of bone involvement.

Taylor and Davis, however, say that latent infection is due to the persistence of bacteria for a long period within the dense structure and the canaliculi. There they are protected from the body fluids and phagocytic cells. They further state that the presence of organisms within the dead bone (whether in sequestra or in portions still attached to living bone) rather than in the soft tissue, is probably the cause of the sinus and the occurrence of the acute recrudescences of infection or flare after secondary procedure.

By the gradual erosion of the sequestrum at the bottom of the sinus, as well as the outgrowth of bacteria from this nidus of infection, continued reinfection of the sinus tract may occur.

#### SEARCH FOR THE CAUSE OF INFECTION

The problem, then, was to discover and remove the cause of continued irritation and infection in these cases, most of which had received attention that in great numbers of fractures had effected a cure.

It was noticeable that the larger number of infected fractures occurred in the mandible. Maxilla fractures barely exhibited pus-discharging sinuses.

A well-established therapeutic procedure, when anatomically possible, is to remove the infection by surgical operation. Again most writers agree that it is particularly essential that no loose bone fragments be removed from the site of the fracture if there is the slightest attachment to the tissues. Bone fragments apparently hopelessly injured will often recover their vitality and serve as a valuable matrix for new bone formation, even should some of these fragments be thrown off later, it having been found that bone fills in more rapidly than when extreme curettement has been done. Piersol states that on the inner surface of the inferior maxilla one may trace the mylohyoid ridge running upward and backward from the sublingual fossa past the molars. Above this line the bone is covered by the mucous membrane of the mouth. Diseases of this portion find expression in the oral cavity. Those of the lower portion of the bone are likely to involve the soft parts and the glands of the neck.

Aided then, by roentgenograms, clinical evidence and anatomic relations, careful search was made to discover the cause of the nonunion of these old fractures.

Foreign bodies, bits of metal, etc., were rarely found, having been no doubt removed in previous treatment. A few cases exhibited bits of



Fig. 7



Fig. 8

Fig. 7. Case 5—Drainage in neck injury below mylohyoid ridge—three months after injury.

Fig. 8. Case 5—Teeth and sequestrums removed in a thirty-day period; splint with posterior fragment depressor.

shattered bone or bone sequestrums that were being exfoliated. These were removed, and union quickly followed. There yet remained cases showing no foreign bodies, no sequestrums, jaws rigidly fixed by interlocking dental splints, still evidencing no sign of union. (We have, however, noted the occurrence of union in a few cases in which infection was present.)



Fig. 9

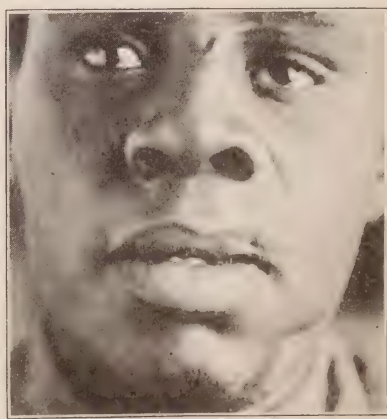


Fig. 10

Fig. 9. Case 5—Firm union of fractures following removal of all teeth after thirty days. Attempt to save teeth prolonged the treatment in this case.

Fig. 10. Case 7—Sinus in left cheek due to infection by teeth in fracture area; five months after injury.



One method of securing immobility appears to me to have been in itself a cause of lack of union as well as causing unnecessary loss of teeth, namely, the wiring together of the jaws by twisting ligature wire around the necks of the teeth and tying the ends to the ends of similar wires attached to opposing teeth, thus holding the jaws in occlusion. This method should be employed only as a temporary measure. Longer period of wiring causes the wired teeth to become loosened, permitting motion to the jaw, elongating the teeth; the mucous membrane becoming swollen and suppurative, often infected and discharging pus, while extraction of the teeth often becomes necessary. This is especially true when there is much loss of bone substance, the strain being too great for them.

#### RETENTION OF LOOSE TEETH AND POSSIBLE RESULTS

In addition to the retention of bone fragments in the areas of the fracture, we have also been advised by most writers that the teeth loosened should also be retained. One writer clearly states that "loose teeth should be replaced in their sockets, no matter how loose they appear to be in the fracture, as they will eventually tighten in place." We observed that this practice had been followed in most of our cases and found no fault with it. However, as time passed, all other causes having been removed, the teeth naturally came under suspicion. Colonel Blair, on seeing these patients, did not hesitate to condemn the teeth. My associate, Lieutenant McCauley, and I did not at first concur with him in this; but, all other means having been exhausted without result, we extracted teeth in or adjacent to the line of fracture in two or three cases and were surprised to note the rapidity with which union occurred thereafter.

The extracted teeth were carefully examined. The pulps were found to be devitalized, sometimes absent, the root-ends were resorbed, sharp-pointed like a carpet tack, or were roughened and pitted. The pericementum was destroyed from 1 to 2 mm., the root length from apex to crown. Foul odor was also noticeable.

The plan was then adopted of drilling an exploratory operation into every tooth in the vicinity of a fracture, and in nearly every instance a dead pulp was encountered. A few pulps were not completely devitalized in appearance, but registered no sensation even when removed.

#### INSUFFICIENCY OF ROENTGENOLOGY TO DISCLOSE THE TRUE CONDITION

Roentgenograms do not show the condition clearly. Possibly the pulps had not been devitalized a sufficient length of time. The teeth had not changed color, trans-illumination and electric current giving no positive results. The roentgenogram does, however, show the relation of the teeth to the fracture, and an exploratory drill soon demonstrated the vital or nonvital condition of the pulp. The removal of these dead pulps and the filling of the root canals, as is done in routine



Fig. 11

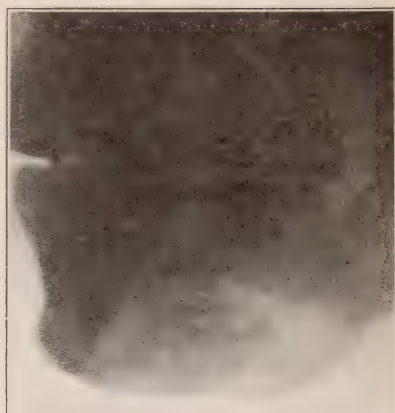


Fig. 12

Fig. 11. Case 7—Five teeth in fracture area.

Fig. 12. Case 7—Teeth extracted; union occurring; sinus closed, after twenty-five days.

dental practice, is practically impossible in most cases, for various reasons, and extraction was the only alternative. I am happy to say, the results were so satisfactory that any regret over the loss of the teeth soon passed away.

This statement is not intended as a condemnation of all teeth in line of fracture of the maxillae. We observed something over 200 cases, whereas there were several thousand cases in the war. The conclusion desired is that if union is delayed, careful examination of the adjacent teeth should be made, possibly by an opening into the teeth. The firmness of the teeth often leads one to believe them unaffected, but it is better to have a firm union with no tooth than a firm tooth with no union.

Bone sequestrums usually exfoliate; teeth rarely do. The conclusion regarding teeth in or near the line of fracture being identical in so many cases, we made a careful study of the matter and desire to submit extracted teeth and roentgenograms to substantiate the statement, especially since it is contrary to the usual belief.

Effort was made to retain teeth for abutments in bridgework restorations. Patients were held as long as ninety days before such teeth were extracted, but delayed union was the only result. We have found that following extraction the fracture quickly united. If partially united and springy, springiness disappeared, pus discharge stopped, sinuses closed in a few days, and the patients invariably expressed satisfaction and comfort not previously enjoyed.

CASE 1.—E., wounded, October 14, 1918, arrived, April 15, 1919, six months after injury. There was no union. A sinus was present. Roentgenoscopy revealed the teeth in line of fracture, April 19, 1919. The teeth were extracted the same day. The sinus



closed, April 25, 1919. Roentgenoscopy, May 25, 1919, revealed the union five weeks after extraction of teeth.

CASE 2.—M., wounded, Sept. 29, 1918, arrived, April 4, 1919, five months after injury. There was no union. Two sinuses were present. Roentgenoscopy revealed teeth in the line of fracture, April 4, 1919. The teeth were extracted the same day. Roentgenoscopy, April 24, 1919, revealed the sinuses closed, union of fragments occurring in twenty days.

CASE 3.—B., was suffering from a bilateral fracture of the mandible, having been wounded, September 29, 1919. He arrived, April 6, 1919, six months after injury. There was no union. A sinus was present in the right cheek. Roentgenoscopy, April 6, 1919, revealed the teeth in the line of fracture. The teeth were extracted. May 26, 1919, the sinus had healed, with union on the left side and a bone graft on the right side after seven weeks.

CASE 4.—D., wounded, October 21, 1918, arrived, February 10, 1919, four months after injury. A sinus and a springy union were present. Roentgenoscopy, February 11, 1919, revealed the teeth and sequestrums in the line of fracture. The teeth and sequestrums were removed. Roentgenoscopy, March 13, 1919, revealed a union and the sinus closed after thirty-two days.

CASE 5.—L., wounded, August 6, 1918, arrived November 19, 1918, three months after the injury. Roentgenoscopy revealed bone sequestrums removed, drainage on neck, October 11, 1918. February 11, 1919, union had taken place. This case is used to show injury to bone. Drainage through neck was for anatomic reasons. Union in this case was delayed sixty days in the attempt to save the teeth.

CASE 6.—H., wounded, October 14, 1918, arrived, March 4, 1919. Springiness of union and sinus were present after five and one-half months. The first roentgenogram, March 4, 1919, revealed teeth in the line of fracture. The teeth were extracted. The sinus was closed in ten days—April 5. Radiogram, May 2, 1919, revealed union thirty days after extraction.

CASE 7.—M., wounded, August 10, 1918, arrived, December 20, 1918, four months after injury. There was no union and much infection. The first roentgenogram, December 20, 1918, disclosed the teeth in the line of fracture. The teeth were extracted, December 20. The second radiogram, January 15, 1919, revealed the fracture united after twenty-five days.

Numerous other cases came under observation and treatment with similar results.

NOTE.—Since this was written I have extended my work and treatment of cases to two other hospitals and have thus had under observation about 500 cases of the less than 700 cases returned to this country.

### **Pennsylvania State Board**

The Pennsylvania Board of Dental Examiners will hold examinations in Pittsburgh and Philadelphia on Wednesday, Thursday, Friday and Saturday, December 10th, 11th, 12th and 13th, 1919. The theoretical examinations will be held at the Musical Fund Hall in Philadelphia and at the University of Pittsburgh, in Pittsburgh. The examinations in practical work will be held on Wednesday, December 10, at 8:30 o'clock, at the Philadelphia Dental College and the University of Pittsburgh. Application papers may be secured from the Department of Public Instruction, Harrisburg. For further information address the Secretary, Alexander H. Reynolds, 4630 Chester Avenue, Philadelphia.

Yours very truly,

ALEXANDER H. REYNOLDS,

*Secretary to the Board.*

PROSTHETIC APPLIANCES IN SURGICAL TREATMENT  
OF WOUNDS OF FACE AND JAWS\*

BY V. H. KAZANJIAN, C.M.G., D.M.D., BOSTON, MASS.

PROFESSOR OF MILITARY ORAL SURGERY, HARVARD UNIVERSITY DENTAL SCHOOL

**I**N GENERAL, maxillary splints are anchored in the teeth and the alveolar ridges. The amount of retention depends on the security and the method of attachment used, while the position and existence of teeth relative to the fracture determine the type of splint to be employed in a given case. When an injury includes the partial or total loss of teeth, or renders the existing teeth unavailable as a means of anchorage, fixation of the fragments is gained (1) by the adaptation of the splints entirely to the alveolar ridges, (2) by external appliances which acquire their support from the cranial bones, or (3) by sutures through the maxillary bones, either alone or in combination with certain appliances. It may be necessary in the treatment of a case to use any one or all of the foregoing methods to effect the immobilization of the maxillary fragments.

In the event of extensive destruction of the maxilla or the mandible, with consequent gaps in the continuity, perhaps no bony union may be anticipated; yet it is necessary to provide that such portions as remain shall be capable of some degree of function in order that oral restorations may subsequently be successfully accommodated. Unless the remaining stumps of the mandible are conserved and favored through the use of adequate appliances, then ultimate uselessness ensues through displacement, deformity and lack of habitual mobility.

The teeth serve as the basis for immobilization, and at the same time as the accurate guide to the former occlusion and position of the jaws in their normal relation one to the other. If the splint is so constructed that the former occlusion of the teeth is restored, then the relocation of the body of the mandible in an automatic position is a near certainty.

The assertion that fracture of the mandible by a foreign body is invariably accompanied by a loss of tissue may be true so far as the teeth and alveolar ridges are concerned; but in the majority of cases, even when there is extensive comminution, the destruction is insufficient to cause a lack of continuity at the points of injury. In other words, severe comminution does not necessarily imply a practical nonapproximation of the fragments of the mandible.

In view of these facts, it is a safer standard to restore the segments by the splinting to a natural occlusion, leaving modifications for application in very rare and peculiar cases. This principle is especially true

\*Read June, 1919, before the section on Stomatology, A. M. A., of which THE DENTAL SUMMARY, by special arrangement, is the representative organ for the dental profession.



in the accomplishment of early fixation, because experience has shown that in many cases of grave comminution, in which there were apparently gaps in the continuity of the mandible and a loss of substance, bony union ultimately formed. In the early days of treatment, it is not possible to foretell the regenerative powers which the tissues will manifest under careful methods.

#### APPLICATION OF MECHANICAL FORCES TO THE SOFT TISSUES

Any comprehensive scheme of treatment for the repair of bone is tempered by the condition of the soft tissues, and the construction of a splint for the immobilization of a maxillary fracture is influenced by the nature of the wound of the face. The surgeon's aim is to restore all tissues as nearly as possible to a normal state, in other words, to repair the injured bones without loss of function, and to close the wounds with the least possible distortion, scar formation or adhesion. If no appreciable loss of soft and hard tissues has occurred, then these objects

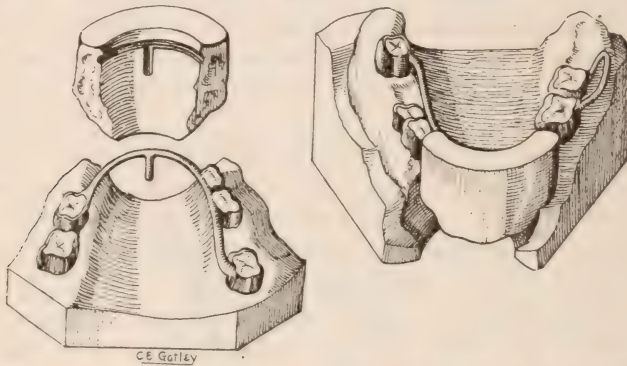


Fig. 1.—Band and wire splint with a perpendicular wire or T. A vulcanite piece with grooves corresponding to the wire is made of sufficient bulk to prevent tissue contraction, and at a later stage it acts as a support in connection with plastic operations.

are easier of attainment; but if, on the contrary, a distinct loss has taken place, it becomes necessary to resort to plastic operations for the correction of soft tissue deformity, and to utilize artificial devices as functional and cosmetic substitutes for bony tissue.

In a strict sense, the splint deals with the repair of bone. But in nearly all cases of gunshot wound of the face and the jaw, the involvement of the soft tissues is appreciable, a circumstance which likewise can be met by the construction and adaptation of an appliance. Such an appliance may be in reality an integral part of the splint or an adjunct to it, or it may be entirely separate from it.

Experience has shown that the treatment of the fracture cannot be carried out as a thing apart from the wound of the face; and in bringing about the repair of both hard and soft tissues, due regard must be given to each in the construction of mechanical devices. As a case under treatment progresses from day to day, slight or even radical changes are

frequently indicated in the splints or appliances, and often surgical assistance is necessary or may tend to hasten the patient's recovery or forestall a certain deformity. Just as the care of the wound and the fracture should not be reduced to two distinct, separate procedures, so the mechanical and surgical technics are inseparable; for perhaps a

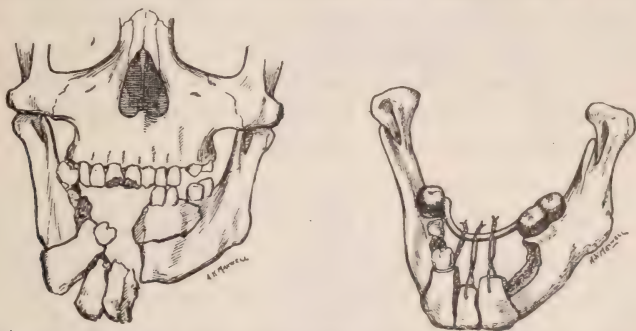


Fig. 2.—A band and arch splint maintains the correct relation of the posterior segments to the mandible, while the anterior segments are brought to alignment by means of wire sutures through the bone.

proposed operation would fail without the help of a suitable mechanical device, and perhaps a certain device would serve no purpose unless adapted and applied by surgical assistance.

The mechanical devices used on the soft tissues are intended primarily to direct the course of recovery and not to correct a deformity. Their greatest usefulness is to be obtained by their application at an early

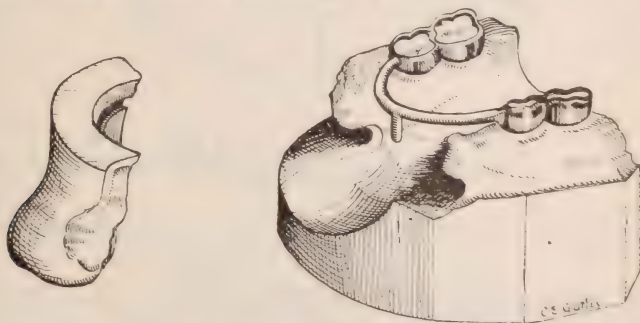


Fig. 3.—The band and arch splint maintains the correct relation of the posterior segments, while the vulcanite appliance supports the soft tissues during the process of healing.

period in the treatment of a patient, when undesired conditions can be anticipated and the occurrence of disfigurement prevented.

Appliances may be used immediately after injury to support the soft tissues, for at this time the parts are soft and still flexible, though inflamed. Gentle pressure applied to the facial tissues during the early course of healing is a satisfactory means of averting undue contraction.



Appliances are also used intra-orally to keep the tissues in a state which prevents undue adhesions to the alveolar ridges, and therefore maintains a more suitable field for the reception of later artificial restorations. If this aspect of the treatment is neglected, then the ultimate ideals will not be attainable. In orthopedic surgery, the operative technic is modified as far as circumstances permit to facilitate the adaptation of artificial limbs; and the same practice is advisable, and even obligatory, in the treatment of injuries of the face and jaws. The remaining tissues must be prepared for the artificial restorations which will constitute the last phase of the treatment.

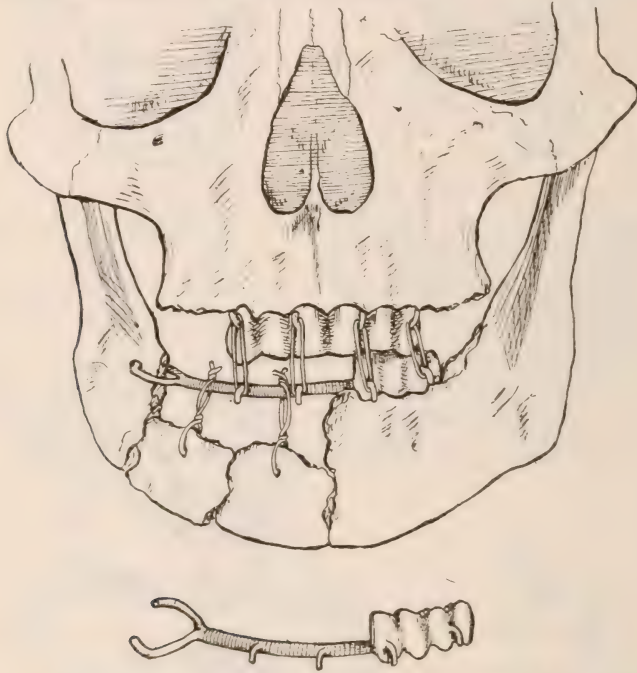


Fig. 4.—Immobilization of segments of fractured mandible when there are no teeth available on one side.

As a rule, appliances of a semipermanent nature are indispensable to the success of a plastic operation on the soft tissues. During the work they serve to hold the contour of the face, lips or nose from within, and in general to act as a support for the soft tissues, as did the natural bony structure of the parts involved prior to the injury.

#### CLASSIFICATION OF FRACTURES

As stated heretofore, in order to utilize the mechanical appliances intelligently, it is necessary to have a comprehensive knowledge of the principles governing the application of splints, and for this reason a practical classification of fractures is of service. Many such classifications are offered. The one which I presented in 1915 was based on the

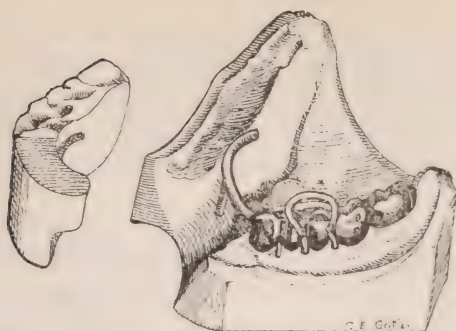


Fig. 4a—A splint used when one side of the mandible is edentulous. The vulcanite piece fits the alveolar ridges accurately, and is retained in place by the wire extension and "T", the occlusion of the upper teeth, and the tissues of the cheek.

location of the fractures in relation to the mechanical forces governing the construction of splints, and was faithfully used in the oral surgery department of the Harvard unit until the termination of our services with the British army.

#### CLASSIFICATION OF FRACTURES IN RELATION TO MECHANICAL FORCES GOVERNING THE CONSTRUCTION OF SPLINTS

I. Mandible. ....	<ol style="list-style-type: none"> <li>1. Anterior to the last existing tooth</li> <li>2. Posterior to the last existing tooth</li> <li>3. Edentulous</li> </ol>	
II. Maxilla. ....	<ol style="list-style-type: none"> <li>1. Fracture of alveolar process and teeth</li> <li>2. Partial fracture(s) with or without comminution and partial loss of bone</li> <li>3. Complete fracture with or without loss of bone</li> </ol>	<ol style="list-style-type: none"> <li>(a) No loss of tissue</li> <li>(b) Comminution</li> <li>(c) Multiple fractures</li> <li>(d) Distinct loss of tissue</li> </ol>
III. Mandible and maxilla	The foregoing conditions in combination	

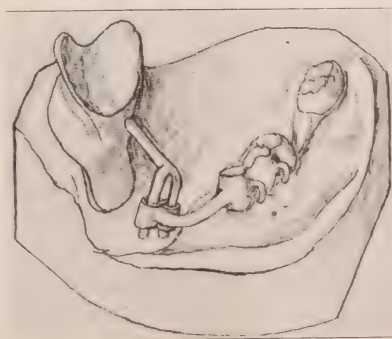


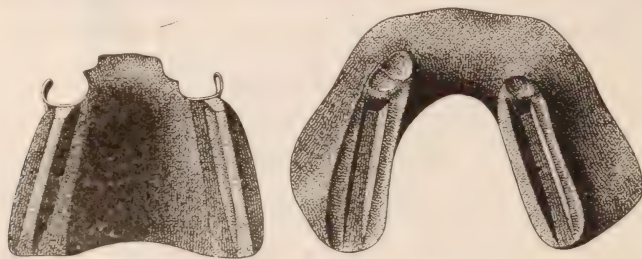
Fig. 5.—Splint and appliance designed to obtain a gradual correction of the position of the edentulous side of the mandible.



## FRACTURES OF THE MANDIBLE

1. *Fractures Anterior to the Last Existing Tooth.*—In this type, the sound teeth on both sides of the fracture serve as a basis of anchorage for the splint which reduced the displacement. The splints are modified only to accommodate the variations of extent of injury between these existing teeth.

*Fig. 1*, shows a very common type of injury of the mandible, in the treatment of which metal caps or bands are fitted to the teeth and connected by a strong arch wire. If the area of fracture is extensive, the arch is naturally longer, and carries at about its middle a short, perpendicular wire, the purpose of which is to form the source of attachment for a removable appliance of vulcanite rubber for the support of the soft tissues. This combination of splint and appliance illustrates the use of mechanical devices both for the repair of the bone and of the soft tissue; the metal splint holds the parts of the fractured mandible in the desired position, and the vulcanite serves to prevent collapse and contraction, with subsequent adhesion, of the muscular tissue.



*Fig. 6.*—Intermaxillary vulcanite splint made in sections to facilitate introduction and adjustment in the mouth.

In some of the more extensive injuries, there exist available teeth on both sides of the fracture, but there is also a severe laceration of the soft parts, and the fragments of bone in the area of fracture are grossly displaced. In this condition it is necessary to raise the fragments to alignment by means of wire sutures from the fragments to the arch wire of the splint (*Fig. 2*). An external appliance is utilized to aid the support of the part involved.

If the injury includes a substantial loss of bone, the same method of splinting is employed to maintain the remaining parts of the mandible in an anatomic position; but the vulcanite appliance becomes more extensive in design, and is practically intended to replace the portion of the jaw which has been destroyed (*Fig. 3*).

It sometimes happens that the band and wire splint, when constructed, is difficult to adjust and cement to the teeth. In this event, it is made in two parts, in such a manner that they may be applied separately. The arch wires of the sides pass each other and are ligated tightly together.

2. *Fractures Posterior to the Last Existing Tooth.*—In this type of injury, a different method of fixation is necessary, because teeth (or a tooth) are available on one side of the fracture only for the attachment of a maxillary splint. As a rule, the teeth of the upper jaw serve as the anchorage for the appliance which immobilizes the fragments of the lower jaw.

A simple illustration of this type would be a case in which the dentition was good and there existed a fracture of the mandible at the angle.

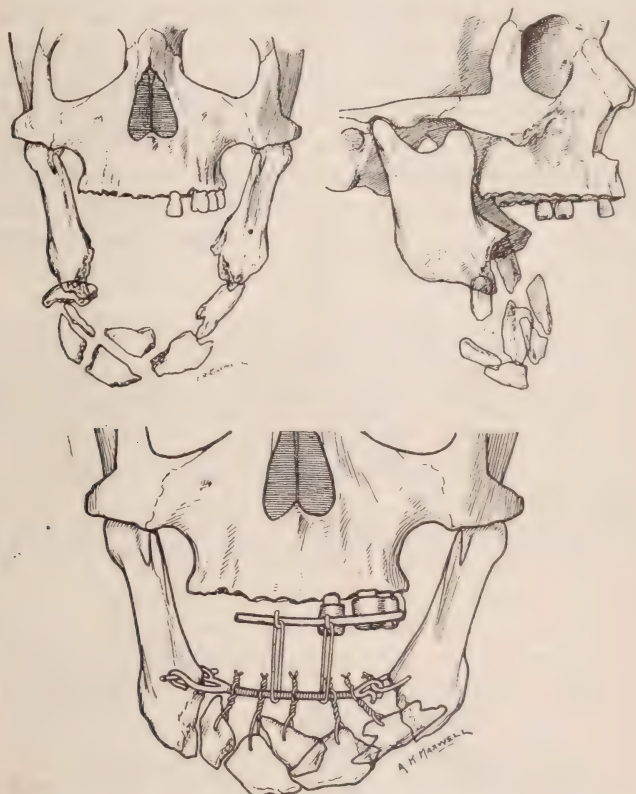


Fig. 7.—Immobilization and alignment of greatly displaced segments of a fractured mandible when no teeth are available for the attachment of splints. When the arch and wire sutures lose their efficacy, they are replaced by a vulcanite intermaxillary splint. Additional support is also procured by means of an external chin piece, as in Figure 13.

Immobilization of the parts of the mandible is effected by upper and lower metal cap splints cemented to the teeth, with small hooks on them for intermaxillary ligation.

In some instances the comminution includes a considerable portion of the mandible, a condition in which, as previously described, no teeth are left on one side of the injury. In this case, the remaining part of the jaw, with teeth intact, is immobilized by means of splints attached to both upper and lower teeth, and, in addition, an arch wire is extended



from the lower splint over the injured area. This arch wire serves the same purposes as were described in the previous type of fracture (in which teeth existed on both sides of the fracture), for the attachment of vulcanite appliances and for the suspension of smaller fragments of the mandible by means of wire sutures (*Figs. 4-4a*).

In this type of fracture, great inconvenience is experienced because of the fact that the portion of the mandible which is devoid of teeth has a pronounced tendency to be displaced upward, outward and forward, thus lessening the natural intermaxillary space at this region. In order to overcome this fact, a small intermaxillary splint of vulcanite is constructed for the edentulous side of the jaw, having its bearing on the upper occlusal surfaces of the teeth and the lower alveolar tissue. This appliance is held in place by its accurate fit to the tissues, and by attachment to the wire arch which passes over the injured area (*Fig. 5*).

3. *Condition in Which There Are No Teeth Adjacent to the Fracture.*—If the fractured lower jaw is edentulous, the process of immobilization is rendered more difficult, and the control of the fragments is not effected as securely.

If the fracture is not severely comminuted and the displacement of the parts of the mandible is not pronounced, then satisfactory fixation is gained by the adjustment of the ordinary intermaxillary splint, which fits the remaining alveolar ridges and the upper ridges and teeth. The intermaxillary splint may be constructed in sections to facilitate introduction into the mouth (*Fig. 6*).

If the comminution and displacement are severe, and there exist fragments of the bone which can be saved, then the following means of immobilization is resorted to: A heavy arch wire is attached to the posterior segments of the mandible and passes over the injured area. To this the fragments are suspended and drawn forward and upward by means of wire sutures; and the assembled lower jaw, as a whole, is immobilized by means of intermaxillary ligatures which pass from the lower arch wire to a metal splint applied to the teeth of the uninjured upper jaw (*Fig. 7*). After a few weeks, when the fragments have become consolidated and the light sutures have lost their efficacy, the lower splinting is removed, and an intermaxillary splint of vulcanite replaces it.

In cases in which the lower jaw presents no teeth, and there is a large gap in the continuity in which there are no fragments worth conserving, a splint is used to keep the posterior fragments in as good condition as possible. This comprises small intermaxillary splints for both sides—accurately fitted between the mandibular stumps and the posterior teeth of the upper jaw—which are joined either by a heavy wire, or by a piece of heavy plate metal which allows a certain amount of flexibility (*Fig. 8*).

It is important to emphasize the necessity of caring for almost any portion of the lower jaw which remains. Even though there is left only a short stump of the mandible at the angle, it should be favored and,

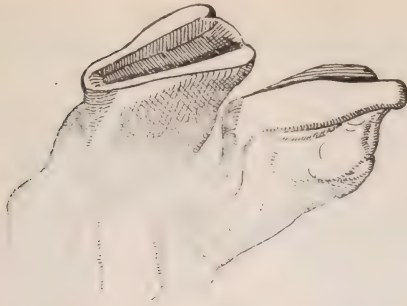


Fig. 8.—Intermaxillary vulcanite splint used when there is less extensive loss of mandible posteriorly. The vulcanite fits the mandibular stumps and adhesions, displacement and inactivity are averted.

by the application of an appliance, kept active, free from adhesions and in good anatomic position, with a view to its service later as a means of support for oral restorations.

#### FRACTURES OF THE UPPER JAW

In some respects, the maxilla is in extreme contrast to the mandible: It is sufficiently rigid to prevent complete fracture from its attachment; but, at the same time, it offers greater resistance to a penetrating foreign body, thus transmitting fractures to the nasal bones and other structures which are in anatomic proximity. The structural delicacy of its parts conduces to extensive comminution. In cases of partial or complete fracture of the upper jaw, the resultant displacement is lateral if the comminution is slight; but if it is great, the displacement is downward.

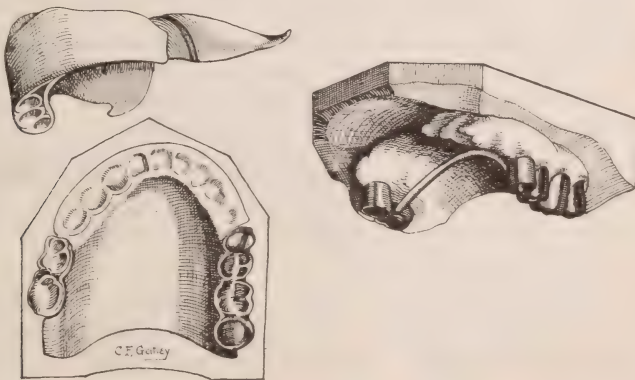


Fig. 9.—The model shows destruction of the maxilla anteriorly and a fracture of the right molar region. The fracture is immobilized by a band and wire splint cemented to the teeth. The vulcanite base plate is retained by attachment to the wire of the splint, and has sufficient fulness and contour to prevent undesirable adhesions and contractions of the soft tissues. It also serves later as a supporting appliance in connection with plastic operations.



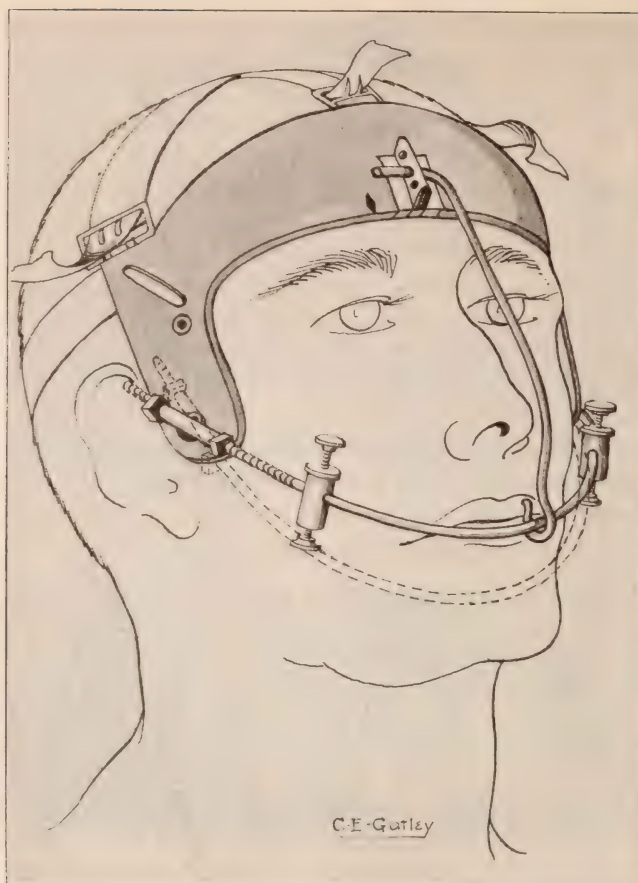


Fig. 10.—Gutta-percha is fitted to the forehead and temporal regions and is retained by a headgear of webbing. The wire arch which passes in front of the face rotates in the holes in front of the ears to allow a wider range of adjustment. In this illustration, the ends of the arch are threaded and pass through small metal tubes (which have short spurs soldered at right angles to permit introduction to the holes in the gutta-percha) with nuts to control the length. In other instances, the ends of the facial arch may be bent at right angles to allow direct insertion in the holes. The median wire controls the height of the arch. Any part of the appliance serves as an anchorage for intra-oral splints, and for nasal and facial supports.

1. *Fracture of the Alveolar Process.*—The simplest type of fracture of the upper jaw is that in which the piece of metal causes comminution of the alveolar process. In some instances this is accompanied by lines of fracture which radiate to other parts of the bone. The treatment of such cases is primarily surgical, since no definite repair of the bony tissues is possible, and consists of the removal of loose and useless spicules and fragments, followed by the approximation of the borders of the lacerated mucous membrane, provided the inflammation is not severe.

It is highly desirable to construct a vulcanite base plate which fits the entire mucous surfaces of the injured maxilla, and which has an accurate occlusal contact with the lower teeth. The purpose of this appliance is to mold the palate and alveolar ridge as the healing goes on, in order that no objectionable muscular adhesions which would render the retention of a denture difficult at a later date shall be allowed to form.

2. *Partial Fracture of the Maxilla.*—In addition to an injury to the alveolar process, there may occur the fracture of a part of the maxilla, with attendant displacement and mobility of a portion. The fixation of the loose segment is accomplished by using the solid part of the maxilla as a point of anchorage (*Fig. 9*). This immobilization is effected by the use of a tightly-fitting jacket splint or by a band and arch wire cemented to the teeth. If the latter method is adopted, a jacket splint or a removable vulcanite piece should be used in conjunction with it, if the wound of the soft tissues is of appreciable size, to support the face about the affected area. The same procedure is indicated when the injury is confined to the palate.

3. *Complete Fracture of the Maxilla.*—Comminution and laceration of the entire maxilla is not rare. It is evident that in the event of this condition there is no basis of anchorage for immobilization available within the mouth, as in the types of cases previously described, and that extra-oral means of support must be used. Before proceeding further with the description of the splints needed, it is advisable to show the construction of a headgear which meets the requirements of the condition.

Gutta percha, 4mm. thick (as used in orthopedic surgery), is cut to fit the forehead and temporal regions, softened in hot water and then bandaged over these parts until it has regained its natural hardness. The headgear is completed by the addition of webbing straps which form a sort of cap over the head. From the lower ends of the gutta percha, at about the level of the tragus of the ear, a heavy arch wire is attached, which passes just in front of the mouth. A stiff but lighter wire also passes vertically over the nose from the median line of the arch to the median line of the gutta percha (*Fig. 10*). After the headgear has been fitted, the occipital region of the head may be shaved and adhesive tape used to secure the webbing which covers that part to the skin. Thus, either the gutta percha or the arch is available as a firm anchorage for nasal, facial, intra-oral or extra-oral attachments; and the appliance may be modified in many ways to meet the requirements of an individual condition.

A simple case of fracture of the entire maxilla, with no displacement, may be effectively treated by strong bandaging of the head and jaws with the teeth set in natural occlusion. This condition, however, is more usually encountered in accidental fractures.



The upper jaw, as the result of gunshot injury, may be reduced to a number of small fragments, with some attendant loss of tissue. When this is the case, it is necessary first to assemble the parts in good relation, and then to effect immobilization by means of extra-oral appliances. The well-known Kingsley splint, anchored to the arch wire of the headgear, is admirably suited to complete the fixation.

Large, open wounds of the nose and zygomatic region often have intimate connection with the maxilla, permitting the fixation of the upper jaw by means of a wire suture passed directly through its upper aspect, which suspends it from the headgear directly. Supplementary

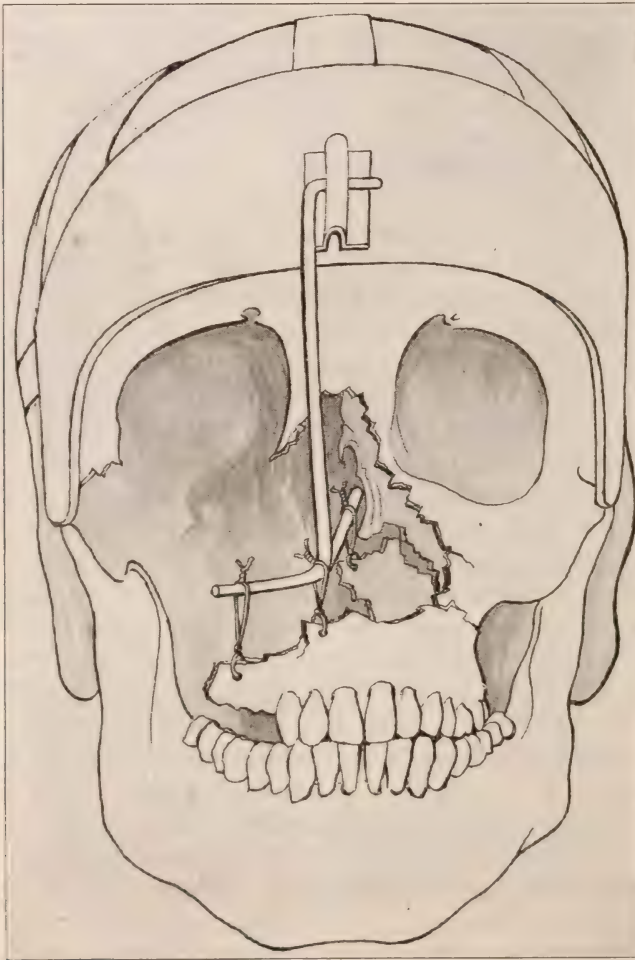


Fig. 11.—Immobilization of the maxilla following complete fracture. Owing to the free exposure of the superior aspect of the maxilla, this method of direct wiring, from the bone to an extension from the headgear, is in some cases very efficient, and also easily done.

support may be given to the jaw by a chin piece so adapted as to press the lower jaw continuously in occlusion with the upper teeth (*Fig. 11*).

If the foregoing methods do not meet the situation in certain instances, the following method may be utilized: The teeth of the sound lower jaw are covered with a cap splint which carries a small attachment—hook, tube, etc.—at its median line. Elastic force is used from this attachment to the headgear to pull the lower jaw against the upper, thus producing a fixation with good relation of the teeth after consolidation.

In applying splints to the upper jaw, there are certain facts which should be observed. The fragments tend to become firm sooner after injury than in the case of fracture of the lower jaw, and the consequent

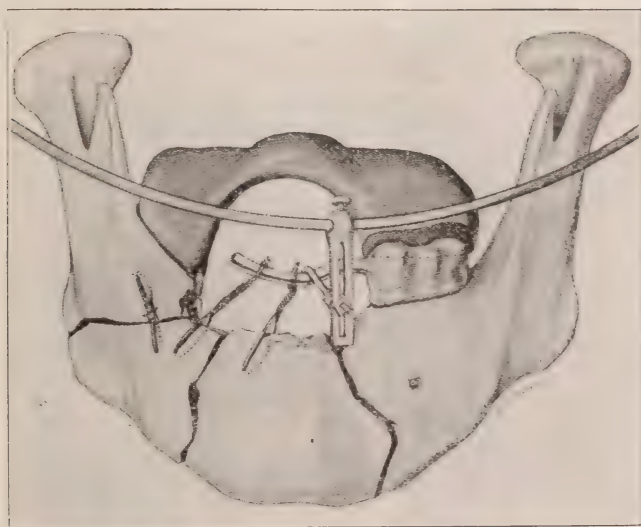


Fig. 12.—Adjustment of the splints to the arch wire; compare Figure 10.

displacement is very hard to correct. Early fixation, even if it be but temporary, is indicated.

In the case of comminution of the upper jaw, provided there are sufficient teeth remaining to reconstruct a useful dentition, the occlusion of these teeth naturally serves as the best guide for the position of fixation. But if that method of splinting is used which brings the teeth into operation, the point at which the teeth come into occlusion is the point for immobilization, and *not* the point at which the maxilla meets resistance from pressure by the splinting against associated structures. In other words, the fractured maxilla is so mobile that it can be pushed upward or inward a considerable distance beyond its former anatomic position.



If the Kingsley splint is used, it should be so constructed that the occlusal surfaces of the teeth are visible, and in actual contact with the lower teeth without the intervening thickness of vulcanite or metal.

#### FRACTURES OF BOTH THE MANDIBLE AND MAXILLA

Fractures of both the mandible and maxilla are quite common. The general principles and methods used in the immobilization of the parts are a combination of those already outlined. If there exists partial fracture of the maxilla, then the parts are assembled first; next, the lower jaw is repaired, and, if necessary and available, support is provided for the mandible from the splint applied to the maxilla, if the remaining firm portion of the latter is capable of withstanding the strain put on it without injury. If a solid portion of the upper jaw cannot be utilized, or if the patient is edentulous, then, in case of necessity, the headgear may be used to supply the desired basis of anchorage (*Fig. 12*).



Fig. 13.—Chin piece used when upward and forward pressure on the tissues is required. The rods of the chin piece pass upward through metal tubes. The tube carries an irregular shaped wire, the lower end of which is bent at a right angle to allow rotation in a second tube attached to the headgear, and the upper end of which passes to the temporal region. The lower elastic causes upward pressure, while the elastic at the temporal region gives the forward pressure.

If both jaws are edentulous, then the intermaxillary vulcanite splint, preferably made in two sections to facilitate introduction to the mouth, is used, and aided in its adaptation, if necessary, by attachment to the headgear, or by pressure beneath from a chin piece (*Fig. 13*).

#### DISCUSSION

ON PAPERS OF TAINTER, DAMERON AND KAZANJIAN

DR. V. P. BLAIR, St. Louis: The lives of many patients can be saved or the convalescence period shortened by proper early treatment. Then comes the question of death or severe illness as a secondary result of the injury. It is a very old observation with people who are operated on for tumors of the jaw under a general anesthetic, that the death rate is apt to be very high because of lung complications due to aspiration. When time permits, local anesthetics are preferable. In selected cases, primary repair of the soft tissues can be made to great advantage but the bones should be restored immediately to their proper positions and held there. We probably had about 2,300 cases of face and jaw injuries in the war, most of them occurring between July 14 and Nov. 11, 1918. Only about 600 of these men returned to this country as patients, the remainder being discharged over there. It was chiefly due to the number of skilled dentists we had available that this result was possible. The work of Dr. Kazanjian was known to all of the Allies and I was very proud that he came from an American school. It is impossible to give an intelligent discussion, in the 400 words allotted, of the vast amount of work he has presented. The work necessitated by this war has put bone grafting of the lower jaw on a firm basis. I think the only definite rules are that it should be an autogenous graft of live bone and should be placed in a clean field. Whether one selects the rib, the tibia or the ilium should depend rather on the conformation of the bone needed than on any other consideration. The periosteum and endosteum should be preserved over as great an area as possible. The greatest danger to these grafts is not failure of primary healing but subsequent absorption which always takes place unless union is firm and the bone is subjected to functional strain. The fewer sutures or wires used to hold it in place the better, as fancy mortising operations give a higher percentage of failures. In the reconstruction work, dental splints are a most important item and often present most complicated problems. These have been well met by such men as Dameron and a number of others who have been working in hospitals devoted to reconstruction of the face.

DR. C. W. WALDRON, Ste Anne de Bellevue, Quebec, Canada: I would like first to tell you how glad the members of the British, Canadian, Australian and New Zealand sections of the Queen's Hospital at Sidcup were to have the large number of American surgeons and dental officers with us for duty, and also to have those who were stationed in other parts of England come and watch our work. We certainly enjoyed their company and their help. They gave us many new ideas, and we were very sorry that Col. Sir Arbuthnot Lane was unable to swing an American section around to the Queen's Hospital at Sidcup. Bone grafting of the lower jaw is one of my pet subjects. I feel that it is nothing like the problem that it was three or four years ago. In the case of fractures with a moderately well nourished bed between the end of the bones, and where the bones are of good quality and good size, free grafts are very successful. The problems in so far as mandibular bone grafting is concerned are, to my mind, now confined entirely to those cases where there is practically no tissue bed, that is not more than two or perhaps three millimeters of connective tissue between the external skin surface and the mucous membrane of the mouth. In these cases, I feel that the pedicle grafts, as advocated by Mr. Percival Cole of King George's Hospital, London, or the osteoperiosteal grafts, are indicated as they have a much better chance of living than free grafts. Another problem is the control of the posterior fragment, where there is a tendency to fixation. That is a matter, of course, of cooperation between the dental surgeon and the surgeon. The institution of very early mobility is indicated, encouraging the patients to use their jaws



to the greatest extent possible. In advocating the iliac crest as a good graft, I feel that it conforms the best with the principles laid down by the men doing extremely good work in bone grafting. It is very strong and readily trimmed to shape. We wire it in position, adopting very simple methods of preparation of the fragments. We have discarded electrical equipment. We feel that a nontouch technic, as advocated by Sir Arbuthnot Lane is advisable, and that the simpler operative methods are preferable. If the entire bone reformation is due to the activity of the ends of the fragments of the mandible, the iliac crest fulfils our desires in that being very cancellous, it is capable of being invaded by blood vessels much more rapidly than in the case of a compact tibial graft. This has been well shown by my colleagues in Toronto, Drs. Gallie and Robertson. I am glad that bone grafting is now on a sure basis. We know we shall get good results if we use reasonable care and do not operate too soon, or where there is latent infection.

DR. FRED H. ALBEE, New York: In drawing lessons from the recent war for application to civilian practice, great caution should be employed, lest many of the experiences thereby gained prove not entirely trustworthy. The type of jaw case, for instance, so frequently met in army work will rarely be encountered in civil practice. Personal experience with civilian cases of injury of the jaw has shown such cases to be usually of many years' standing, with persistent nonunion owing to extensive pathologic changes in the bone ends, such as eburnation, loss of osteogenesis, blood supply, etc. In the army, on the other hand, the cases of jaw injury met are usually of only a few months' duration, and are usually more favorable to union. The high vascularity of the tissues of this region and the retention, in most cases, of the osteogenetic power of the jaw fragments have afforded such favorable conditions as have, doubtless, contributed largely to whatever degree of success has been attained by the use of the recently revived osteoperiosteal graft in reparative work on the jaw. Repair of the jaw with extensive loss of bone substance, however, offers great difficulties of mechanical fitting and adjustment. Such work requires an accuracy and rapidity of technic only secured by delicately adjusted motor-driven instruments. The construction of a suitable framework over which to restore the contours of the face is of primary importance if the cosmetic result is to be satisfactory. The inadequacy of the osteoperiosteal graft for this purpose is apparent. Only by means of a strong fixation graft, molded and firmly inlaid into each fragment, can the proper contours of the face be restored. As a supplement to the fixation graft, of the peg or inlay type, the osteoperiosteal graft is of great service in furnishing an additional focus for bone-growth. The high percentage of failures reported by certain individuals in this work, may be attributed largely to the use of foreign bodies. Kangaroo tendon is more trustworthy than silver wire. Like the osteoperiosteal graft, the use of the pedicle graft is distinctly limited. The pedicle graft is seldom indicated or feasible. Its utter inadequacy is especially apparent in jaw cases in which there is much loss of bone. This jaw work, if it is to be ideal, should always be done, when possible, with the closest cooperation between plastic surgeon and prosthetic dentist. The statement was made that the dental splint will furnish sufficient support in all cases. Where there are teeth, that is possible, but in cases in which there is loss of molar teeth, as well as bone, it would not be of any use. Moreover, if the patient is not able to tolerate it, the splint must be removed. The greatest stimulus to healthy metabolism and proliferation of the graft is mechanical stress. By one sure means only can this stress be brought to bear on the graft, namely, by its insertion into the substance of the lost bone fragments by such an accurate inlay technic as will insure a perfect cabinetmaker fit.

## GENERAL ANESTHETICS FOR INTRA-ORAL OPERATIONS\*

BY C. H. BURMEISTER, D.D.S., CINCINNATI, OHIO

ATTENDING DENTAL SURGEON CINCINNATI GENERAL HOSPITAL

THERE ARE many factors in the administration of anesthetics for intra-oral surgery which make the technic one of the most difficult to be attained.

The obvious necessity of administering the anesthetic with the mouth open causes a radical departure from the closed and semi-closed methods. The vapor or gases must be sufficiently rich and under pressure to force out the atmospheric air from the pharynx.

The small field of operation in which the anesthetist, operator and assistant have to work, makes the administration much more difficult than if the anesthetist had the whole head to himself. The unavoidable hemorrhage complicates the administration and requires supervision and cooperation with the operator's assistant, whose duty it is to keep the blood and mucous aspirated from the pharynx. The forcing down of the jaw during the operation interferes with the respiration and is another point for the anesthetist to watch. It can readily be seen that the successful administration can be attained only by the closest observation and cooperation of every one concerned, and the checking up of each other during the operation.

The choice of the anesthetic depends primarily upon the patient's physical condition, and secondarily upon the individual anesthetist. Chloroform produces a beautiful anesthetic for mouth work, but the high mortality and frequent post-operative complications contraindicate its use. The committee on anesthetics appointed by the American Medical Society, in 1912, reported the use of chloroform as an anesthetic as no longer justifiable, and that for minor operations its use should cease.

N<sub>2</sub>O-O and ether, alone or in combination, are the anesthetics of choice. Nitrous oxid-oxygen used with the nasal inhaler, is ideal for short operations. In long operations, especially when the nasal fossæ or antrum are opened, it is necessary to use ether in combination with the gases. This is administered best by the ether attachment on the gas machine. For resection of the jaw, removal of large cysts of the ramus, resection of nerves and any operation involving the tongue, the writer prefers the ether vapor by the intrapharyngeal method. The vapor can be controlled much more easily, due to the air dilution from mouth breathing.

For any operation in the mouth, including the extraction of teeth, where a general anesthetic is indicated, the dental chair is replaced by an operating table. By this method the head can be placed in any position

\*Read before the Psi Omega Dental Fraternity, Cedar Point, Ohio, July, 1919, and before the Interstate Association of Anesthetists, Cincinnati, O., Sept., 1919.



suitable to the operator and the anesthetist has a better view of the patient and reflexes. Should the patient become hard to manage during the anesthetic, he can be restrained easily, as will be shown by the slides. The lower jaw can be held forward, which sustains an open airway. If a tooth is accidentally lost from the forceps it is less liable to enter the larynx. When the proper aspirator is used and the throat is packed, there is as little danger of blood being aspirated into the bronchii as when the sitting position is used. The circulation is much better as is the respiration. Due to this fact there is less danger of cerebral anemia.

It is a fact that  $N_2O$  has been given thousands of times by dentists without a physical examination or taking of blood pressure. While



Fig. 1.—Anesthetic and emergency equipment.

this fact proves the safety of the anesthetic, it does not justify the practice.

In preparing a patient for a short operation it is advisable that the stomach and bladder be emptied and all tight clothing loosened or removed, the latter being the duty of the assistant. All emergency and anesthetic equipment are in proper place before the patient is brought into the operating room. After the operating table is in position and the patient instructed in breathing through the nose with the mouth open, the mouth gag is placed in position, the nasal inhaler adjusted and the

nitrous oxid turned on. After the patient is under the influence of the anesthetic, the back of the mouth is packed with gauze and the operation begun. Enough pressure must be present to force the gases into the post-nasal pharynx.

For a long operation the patient is prepared as though it were a laparotomy. There must be an examination of the heart and lungs and if ether is to be used, a urine analysis. This should be routine work as no one can prognosticate the outcome of an anesthetic. If the anesthetist



Fig. 2—Operating table with patient in horizontal position. Table has been equipped with arms, making possible its use as a treatment chair in any position. It has been lowered six inches which allows operator to be seated if desired. Strap is placed just above knees, and cuffs which are attached to table are placed on wrists.

is a dentist and not qualified to make these examinations, the patient should be sent to some one who has the proper qualifications. The patient usually comes into the hospital the night before the operation, when a light meal is allowed, followed by a cathartic. An enema is given on the morning of the operation. By following this rule you are positive of the patient's diet and run no risk of vomiting which retards the anesthetic and may be inspired into the bronchii causing complications.



The patient is brought into the operating room in an operating gown. The anesthetist is sterile, as is the operator. When ether is to be used no premedication is necessary; but when  $N_2O-O$  alone is to be used, an H. M. C. tablet is given one-half hour before the anesthetic.

When intrapharyngeal anesthesia by the vapor method is indicated,  $N_2O-O$  ether is given as a sequence. A surgical plane of anesthesia must be induced before the catheters, which are moistened with sterile water or vaseline, are introduced into the post-nasal pharynx. A good rule given by Conell is that the length of the catheters is equal to the distance



Fig. 3—Nasal inhaler in place. All anesthetic equipments on left side of table.

between the alae of the nose and the auditory meatus. Care should be taken that this rule is observed or the vapor will enter the esophagus and dilate the stomach and the patient will come out of the anesthetic.

No dentist or surgeon should act as both anesthetist and operator, and he who does so is not giving his patient the maximum of safety. Even if the anesthetic is to be for what seems a simple extraction, this should be done in a surgical-like manner; not destroying bone and tissue because of the limited time the patient can be kept under the anesthetic.

We are removing roots of teeth and necrosed bone due indirectly to the limited time that the operator has had for work. The majority of extractions are devitalized teeth which are very brittle and apt to break. This often necessitates a resection of the buccal plate of the jaw in order to remove them properly. This requires time and undivided attention. A dentist giving  $N_2O-O$  for an extraction, even with the assistance of a competent nurse who is not a trained anesthetist, can not give his undivided attention to the operation. If complications arise during the operation, caused by a poorly-administered anesthetic, the operation is



Fig. 4—Nasal tubes in place with back of mouth packed with gauze. Position of nurse who keeps blood aspirated from the field of operation, is at the left of the anesthetist.

generally a failure, which could have been prevented by the employment of a skillful anesthetist.

The use of suggestion at the proper time is a great factor in the successful administration of anesthetics. Few indeed are the people who are not nervous and apprehensive when the necessity for an anesthetic actually arises. One of the duties of the successful anesthetist is to allay these fears. The assistant can do much by her manner to inspire confidence. Every thing must be matter of fact with no loud talking, whispering or professional discussion by those in attendance. No straps



are placed on the patient before he is anesthetized, when a strap is placed just above the knees, and cuffs which are attached to the table are placed on the wrists to keep the arms from dropping over the sides of the table which may cause a possible pressure paralysis.

It is difficult to administer anesthetics in a hospital which has no special anesthetic equipment. It has been the practice of some dentists to send their patients to the hospital for the removal of impacted teeth under ether. The open method is used, the operator working as long as he can before the patient comes out of the anesthetic, when he is immediately resaturated. This is poor practice as it requires twice the time and anesthetic to do the same amount of work.  $N_2O-O$  by the nasal method, or the intrapharyngeal method with ether is indicated.

When there is a question as to the depth of the anesthetic or as to the condition of the patient, give the patient the benefit of the doubt and stop the administration.

Everybody who is giving anesthetics should have all emergency equipment in working order at all times; for in case of accident, providing the anesthetic was properly administered, the anesthetist will not hold himself responsible.

Anesthesia is an art which can be mastered only by special study and each anesthesia should bring one nearer to the high ideal toward which he is working.

Union Central Building.

## CEMENTING ON A BRIDGE

BY FRANK W. SAGE, D.D.S., CINCINNATI, OHIO

**A**FTER the utmost care and painstaking in constructing a bridge, one may fail at the last moment in what seems a simple matter—that of cementing it properly on the piers. We all know the difficulty of handling cement in hot weather; unless mixed on a cooled slab it sets too fast. This deserves a special word, in passing.

We have been reminded that cements properly mixed, that is to say, by drawing the powder slowly and in small portions at a time, into the liquid, set more slowly. What we now refer to more particularly, is the setting of the cement, no matter how thin the mix, before we have fairly pressed the bridge down to place. It often happens that hurry as we may, we find it has not gone exactly far enough down, so that considerable grinding is required, to get a proper occlusion. The patient returns again and again, complaining that it keeps the teeth from closing, and we spend an hour or two in grinding. This is not an uncommon experience. The annoyed dentist resolves that it shall not occur the next bridge he makes. Yet despite all care it does happen again.

What is the precaution required to prevent this? Why does it happen?

Dr. Richmond, the inventor of the shell crown, instructed dentists to drill a small hole in the crown, at a point convenient for filling with foil, after setting the same. This allows the cement to escape, allows us to force it quite to place. This precaution seems to be wholly neglected today. I believe it always should be observed, especially in cases where the tooth or teeth crowned be trimmed only to a cylindrical shape. Even in cases where the crown has been trimmed to a point, it acts as a piston within the encircling shell of gold, compressing the cement, and causing it to act as a buffer, preventing the crown from going to place. This may happen even though the cement be mixed quite thin, almost of a creamy consistency.

Since returning to Dr. Richmond's early instructions, I have had little difficulty in setting bridges; have been spared much after-grinding.

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### ROACH VERSUS BONWILL CLASPS

BY H. W. ALLWINE, OMAHA, NEB.

**A**FTER a long experience with fixed bridge-work, the dental profession is trying to get away from much of it. The reasons are apparent to every dentist, and need not be repeated here. Dentoradiography is revealing to us hidden defective work that is a great cause of pyorrhea. To pyorrhea and other dental disorders are traced foci of infection of many bodily ailments. We want appliances that can be removed and that avoid the mutilation of teeth, and irritation of the soft tissues. We are returning to the partial plate with clasps.

I was much interested in an article in the October SUMMARY, by Doctor Roach. We have all heard of Dr. Roach. We believe that he is giving us a beautiful substitute for some bridge-work. I believe, so far as use is concerned, it fills the want; I believe it is a thing of beauty; but the Doctor tells us it is not a joy forever. Let us see what the Doctor says.

"We believe that all clasps that do fit the tooth accurately, to be kept clean by the patient, must be left out at night; otherwise there is liability of damage following the employment of this type of clasp.

"I fully recognize that the clasp as we are making it today, that accurately fits the tooth and covers so much of the area of the tooth, is very liable to cause decay. It is a dangerous form of attachment to the natural teeth. If we don't impress upon our patients this danger and take the precaution to put this clasp in a condition that it can be kept clean and insist upon it being kept out at night. \* \* \* \* \* Impress it upon them that if they don't take care of them and take them out at night that the teeth surely will decay around them, and that if they do decay, it is their funeral and not yours."



The cast clasp fits with perfect coaptation. In this case, there is sure to be chemical action under the band. The Doctor tells us this, and we all know it. He would overcome this action under the band by leaving the appliance out at night. Is this enough? Allowing eight hours for rest, there are still left sixteen hours of the day in which time the plate is in the mouth. I can't see how this make of clasp can be long-lived, as it is sure to cause trouble.

I would make a suggestion. The main object of replacing teeth is to get proper mastication and insalivation. The Roach clasp and appliance are good. They fill the want while they last; hence they are of untold benefit to the patient. Why not leave the plate out at night and most of the day? Just leave it in enough during the day to prevent movement of the teeth so the appliance will not fit? The result, I believe, would justify this, and it would then be, so far as use is concerned, "a joy forever."

I would make one more suggestion. Crown the supporting teeth with properly-made crowns. In this way we get a permanent piece of work, so far as our work is considered permanent. In crowning the tooth, all the bell should be taken off the tooth. A wire measurement at the neck of the tooth should slip off without being broken; this will give a close fit of the crown to the tooth. Before setting the crown it should be trimmed so that it will come barely to the gum margin, and bring the edge of the crown to a feather edge so it can be burnished to the tooth. Rather have the crown come short of the gum than go under it. Now put in the appliance, and it can remain all the time, having to be removed only to be cleansed. I would prefer doing this in the first place than to be forced to do it later.

I had the great pleasure of personal touch with Dr. Bonwill. We can all take off our hats to this great pioneer of dentistry. I not only read the Doctor's articles concerning the Bonwill clasp, but had the pleasure of seeing appliances in his mouth held by his own make of clasp. I also heard him go into detail as to how to make them. His clasp was made to touch the tooth at about four points only; he avoided perfect coaptation. He claimed that by thus avoiding a perfect fit, the motion of the soft tissues kept the secretions in motion under the clasp, and prevented decay that is sure to follow the cast clasp. He claimed two valuable points for his appliance: He avoided the mutilation of good teeth, and prevented the teeth from decaying under the clasps. I never heard him advise leaving the appliance out to avoid decay. I never do.

Just yesterday I had a patient wearing one of these appliances come in. It is in the lower left molar region. It was perfectly clean and the gum, margins and under the saddle, were a perfect pink and without the least irritation. She said, "I chew on it as on my natural teeth,

I don't know it is there. I wish I had one where my upper stationary bridge is."

Don't take a bite and impression, send them to the laboratory, and expect a good fit. Make a good plaster cast of the teeth. Fit the clasps. Now put them onto the teeth. Make such changes as the case requires to adjust the clasp properly. Now, if you are making a rubber saddle, with the clasps in place take a bite and impression, and finish the case. If the base is of metal, fit the clasps, take an impression with the clasps and saddle in place; run cast in compound that will stand heat. Solder on the clasps. Now put to place in the mouth, take the bite and impression and finish case.

It will be remembered that in any of this kind of work, the only grinding of the teeth is to let the lugs up or down, as the case may be, to avoid contact with the occluding teeth.

The proper restoration of lost teeth requires physiological and anatomical knowledge, skill, good judgment, and care on the part of the operator. These requirements should be at hand with every dentist, whether he does the work or sends it to the laboratory. Laboratories often fail, not in point of beauty of execution, but in making what the case demands because they do not get the proper data from the dentist.

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### LOCAL ANESTHESIA FOR THE GENERAL PRACTITIONER IN DENTISTRY\*

BY F. W. ROUNDS, D.D.S., LOUISVILLE, KENTUCKY

**I**N THE YEARS that are gone the charge frequently has been made, and with much justice, that the dental profession as a whole has been prone to jump at conclusions unwarranted by scientific investigation and unsupported by evidence other than that offered by empirical demonstration. That these charges are more or less true our older practitioners undoubtedly will testify.

We know that the closets of many an office are clogged with discarded paraphernalia confidently bought with the idea of revolutionizing dental technic. We have perhaps been prone to accept the assertions of an optimistic order as the "last word" on a given subject only to realize later that there is no such thing as a "last word" in a profession as progressive as is ours, and that the so-called authority of today may tomorrow be regarded as a dreamer and a visionary.

It is by reason of our errors, however, that we are able to detect the true from the false. Our ideals never have been questioned. Were it not for our efforts to reach these ideals, though they be misdirected, stagnation would result.

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\*Read before the Kentucky State Dental Association, June 12, 1919.



Thankfully we may state that no one has had the temerity to accuse our profession of a stasis of progressive thought or of a gangrenous mentality, due to the obstructed circulation of ideas.

In every line of our endeavor we are admittedly on firmer ground than ever before. Our blind faith is giving way to intelligent understanding, our gullibility is yielding to the demand for accurate and painstaking investigation. The big advances of recent years are due in large measure to the scientific standards which form the basis of our modern dental practice.

Recognizing, as we do, that the profession is progressive in its aims and that guided by the light of science our technic has reached a stage of development never before attained, it appears to me that one phase of our work has not received its deserved attention from the general practitioner, and that is the comfort of the patient during tedious dental operations and the freedom from pain which is undoubtedly within our power to obtain.

While it is true that our literature in recent years has been replete with ideas tending to this end, that various anodyne medicaments have been employed with some excellent results, and that analgesia by inhalation of narcotic drugs has been used successfully by a few, the indictment by the laity that mental misery, bodily fatigue and nervous exhaustion still are associated with the everyday operations of the practicing dentist, still holds good.

The general surgeon is attempting no simple minor operation without freeing his patient from the danger of shock. Many of us are still operating on highly-organized tissues without a thought as to the disastrous constitutional sequelæ.

Present-day conditions demand more dentistry than ever before and unfortunately the nervous systems of our patients seem to be more unfitted with each generation to withstand the pain incident to this work. We are not true to our highest professional ideals unless we grasp our possibilities and make painless dentistry a reality.

It is in recognition of this situation that we wish again to bring to your attention the merits of novocain as a means by which the general practitioner in dentistry may perform his work painlessly for his patient and to his own satisfaction.

In reiterating the advantages presented by the use of this agent we are not appealing to your imagination, we are not presenting extravagant claims for a cure-all, nor are we asking you to believe unproved statements. We are not offering for your consideration an untried agent of which you know nothing. Many of you already have demonstrated its worth in your practice. Utilized for several years by leaders in our sister professions, admittedly more conservative than ours, and by thousands in our own field, it has lived up to all its claims as the local anesthetic par excellence.

It is to you who have not taken advantage of its merits that these few remarks will be directed. It is to the still sceptical among you that we desire to demonstrate its usefulness in an endeavor to prove its application to your individual needs.

It is to you, who realizing its value, still hesitate to use it, either through fear of your ability, or the dread of unfavorable sequences that we will attempt to show that its employment is rational and safe, if intelligently applied.

Dentistry has reason to be proud of its anesthetic history; from the days of Horace Wells our scientific confreres have blazed the way. As a whole profession, however, we have not appreciated the important role anesthesia is destined to fulfill. If we have realized its import, we have neglected to invoke its beneficent aid for our own personal use.

We believe that novocain-suprarenin in conductive and infiltrative injections has been amply demonstrated during the last five years to practically overcome the sceptical mind. In almost every locality a sufficient number of conservative operators have testified as to its merits. We are convinced that the chief objection on the part of the non-user is his lack of confidence in his technical dexterity and what he believes to be his too superficial knowledge of the human economy. To us the most forceful arguments in its favor are its almost universal application and the simplicity of the technic involved. There is not one among you who cannot master its requirements with a little experience, if you are so inclined.

We are not by any means attempting to argue that perfection in local anesthesia is reached, or even approached. Our contention is that this method is the most sane, efficient and universally applicable of any yet presented to the profession for the general dentist in his daily routine.

Why is it considered the best local agent at our hands?

For our answer we assume that we are accustomed to look upon cocain as our standard local anesthetic. In novocain we have a drug rated at about one-seventh the toxicity of cocain with an equal anestheticizing power. Whereas the latter is a protoplasmic poison, in the former we have a harmonious substance, non-irritating, causing neither dehydration nor tumefaction. We can boil it without inviting decomposition thereby assuring ourselves of its sterility, and it admirably unites with the suprarenal extract, an agent very essential to good local results.

Two contraindications to local anesthesia present themselves:

*First*, in those cases where false ankylosis has developed. In a large percentage of these conditions we find a lower third molar responsible. The patient is suffering pain and we are unable to open the mouth sufficiently to expose the field of injection. The mental state of these



patients is usually in itself so abnormal that local anesthesia would afford little relief. For these cases a narcotic is imperative.

*Second*, injections must not be made into a septic field. In inflamed areas we cannot logically expect a local injection to do its best work and the ever-present danger of extending the already established infection to deeper healthy strata must be avoided.

Conductive injections are often applicable, however, where infiltration is for these reasons contraindicated.

While the neurasthenic upon which we often are obliged to operate does not present an absolute contraindication, favorable results are problematical. If surgical procedures are to be invoked a gas-oxygen anesthesia is far superior to novocain administrations. If operative dentistry is to be performed, and otherwise the patient would be subjected to pain, dread or fear of pain, results have proved that the use of novocain materially helps, although on this type of individuals, we cannot look for maximum efficiency. Thousands of highly nervous people will testify, however, that they can now approach the dental chair without fear, whereas formerly they inevitably sustained mental shock if not that caused by physical trauma.

Bearing in mind these considerations we know of no cases involving pain which do not constitute indications for novocain anesthesia. This list includes the fitting of bands, the preparations of sensitive cavities, the scaling of pyorrheal teeth, the immediate extirpation of pulps, the exposure of pulps in pulpitis and pericementitis, extractions, curettages, root resections, reduction of fractures, immediate relief from odontalgia, lancing of abscesses and other minor oral surgery.

From the anesthetic point of view the results obtained can be made almost uniformly successful. When failures are encountered investigation nearly always proves them due to the faulty technic of the operator or a misjudgment of the indications. Invariably we find the patients gratified with the anesthetic results and happy with their freedom from pain during these operations. As a time-saver and a practice-builder, we believe this method has no known equal.

We must emphasize three rigid requirements for success.

*First*, rigid asepsis from first to last.

*Second*, an adequate knowledge of the anatomical structures involved, the nerve supply to the part and the soft tissues contiguous.

*Third*, a technic developed in accord with certain well established rules.

These requirements are essential and are within the scope of every practitioner.

The armamentarium is simple, easy to take care of and is inexpensive. An assistant is unnecessary in its manipulation. The operator, understanding the condition of his patient as no one else does, is his own anesthetist. The patient at the conclusion of the operation can leave

the office immediately. No preliminary preparation on the part of the patient is necessary and no after-care is demanded.

Now, lest we appear too enthusiastic, let us consider some of the problems which might discourage the novice or militate against success.

*Failure to obtain anesthesia* is perhaps the most common condition which bothers the beginner. In infiltration injections this occurrence scarcely ever happens. Care should be taken, however, to make as few punctures with the needle as possible, not only to avoid injuring the mucous membrane unnecessarily but repeated punctures may cause a loss of the solution. If no anesthesia results from the injection a repetition may be made, as we are always well within our maximum dosage.

*An imperfect knowledge of our anatomy* is one of the most common causes of failure. Bear in mind that in the infiltration method the drug must be absorbed through the cancellous bone structures and that the needle must come in close contact with the bone in these areas.

The pterygomandibular injection generally proves the most difficult for the inexperienced. The solution must be deposited in the mandibular sulcus to obtain anesthesia of the inferior dental nerve. The needle must pass over the lingula and must be kept close to the internal surface of the ramus. An injection too far mesially not only fails to anesthetize the nerve, but is taken up by the internal pterygoid muscle. A stiffening of the muscle, due to slow absorption surely will follow, accompanied by difficulty in opening the mouth.

*Deteriorated drugs.* To make a perfect solution our ingredients must be fresh. The solution must be clear. If discolored, it may give a good anesthetic result, but undesirable after-effects may follow.

*Too large a percentage of suprarenin.* Thoma calls attention to the fact that an exceedingly high percentage of suprarenin, by its astringent action, may prevent the infiltration of the novocain into the center of the nerve trunks. We never have noted this result, perhaps because in our practice we never have found it necessary to use suprarenin in large doses. The dangers of large amounts of this powerful drug will be mentioned under a special heading.

*Pain during the injection.* The causes of pain during the injection easily are discovered and eliminated. They are:

1. Non-isotonic solutions.
2. The addition of antiseptic agents to our solution, such as thymol and listerine. These agents have been found to be irritating.
3. Injecting into a septic area. This also spreads the infection and should be avoided.
4. A solution which is not at approximately blood temperature.
5. The use of dull needles.
6. Forcing the solution to the desired spot under excessive pressure. This is not necessary even in infiltration injections and scarcely any pressure is needed in the conductive method.



*Post-operative pain.* It is hard to tell in surgical procedures whether pain after operation is due to the anesthetic agent or to the trauma. Pain due to the injection only can be determined after an operation on the teeth alone. There are certain known causes of post-operative pain apart from the operation itself. They are:

1. Using a non-isotonic solution.
2. The addition of antiseptics to the solution.
3. Infection due to:
  - (a) Injecting a diseased field.
  - (b) Using a non-sterile syringe.
  - (c) Using a non-sterile needle.
  - (d) Using a non-sterile solution.
4. Infection of the needle puncture during or after the operation.
5. Using too hot or too cold a solution.
6. Using deteriorated drugs.

*Prolonged anesthesia.* Sporadic cases of unduly prolonged anesthesia have been reported. We never have seen them. It seems probable that the causes are an injury to a nerve trunk during an operation, as in cases of extraction of impacted wisdom teeth where the tooth socket impinges on the mandibular canal, or the injection of alcohol left in the barrel of the syringe. It is improbable that the small amount of the solution used in dental cases is ever *per se* responsible for anesthesia of nerve trunks continuing beyond the normal period.

Oedema, if not due to infection, quickly disappears. It is a simple swelling accompanied by an exudation of serum. It may be caused by a non-isotonic solution, an injury to the membrane due to repeated pricks of the needle, by injecting into a muscle, by the use of a stale solution or by a too high percentage of suprarenin.

*False ankylosis.* In the pterygomandibular anesthesia, if we inject too far mesially and force the solution into the internal pterygoid muscle, the slow absorption causes a false ankylosis oftentimes, which may last several days.

Difficulty in deglutition also is frequent. The patient is apt to be alarmed and needs reassurance.

*Eroticism.* While we never have seen a case of eroticism under a novocain administration, it is a recognized fact that all anesthetics may produce sexual stimulation. General anesthetics produce this tendency more than local agents, although numerous cases have been reported under cocain anesthesia. This effect is noticeable more in female patients than in males. Fischer notes an occurrence of this kind under novocain. The presence of a third party during the administration of even a local anesthetic is therefore advisable. Fischer, in his text, remarks that the rarity of this condition under novocain administration is but another argument in favor of its use.

*Narcotic slumber.* Fischer also cites a case of mild intoxication or irritation of the central nervous system produced by an exceedingly small quantity of novocain, which resulted in a condition resembling narcotic sleep. The patient soon was aroused and no ill effects were noticed. This occurrence is so rare as to be negligible.

*Hysterical spasms,* following novocain anesthesia, have been noted. The patients were subject to hysteria, which broke out under the added stimulus of the injections. Hysterical patients are not good subjects for local injections. Psychic shock easily may follow because of their mental condition. For persons with such tendencies, general anesthetics usually are preferable, in our opinion, if the operation is of any magnitude.

*Dangers of local anesthesia.* Since all anesthetic agents are poisonous if used indiscriminately, it is evident that their use is attended with some dangers unless regulated by strict rules and adequate knowledge of their properties and actions. In this respect local anesthetics present distinct advantages over general anesthetics since they seldom endanger the life of the patient. A sane and careful administration of any drug minimizes its dangers, and local agents, as now employed, present no elements of danger which cannot be combated successfully.

The use of cocain, the powerful and once invaluable ally in the battles against pain in the dental chair; should now be obsolete, in our opinion, owing to the discovery and introduction of an agent equally potent in its pain-relieving qualities and so much less toxic, and which has proved to be thoroughly harmonious to the tissues into which it is introduced. What argument is left in favor of the continued employment of a protoplasmic poison, a habit-forming drug and a specific toxin upon the nerves, kidneys and the heart, which may cause death by respiratory paralysis? We must realize as well that even the injection of the substitutes for cocain may have unfortunate sequelæ under certain conditions, and that even novocain, the best dental local anesthetic yet produced, if employed in excessive doses, or under septic conditions, may produce serious toxic effects.

With the intelligent use of novocain, however, there are no dangers. It is absolutely non-irritating to the tissues, it does not affect the circulation or respiration, and according to Willinger, can be used with impunity in proper dosage even in pregnancy and lactation. The author has used it on patients of all ages and never has seen any disastrous results which could in any way be attributed to it.

Patients sometimes experience peculiar sensations immediately after injection. They complain of queer feelings in the fingers and hands, the heart beat is accelerated and profuse perspiration may occur. The cause of this condition is either psychological or is due to too high a percentage of suprarenin. In our practice we have noticed this condition infrequently, except in hysterical patients, when the mental status of the



patient appeared to be responsible for it. In cases of arterio-sclerosis, or a suspected high blood pressure, it is always wise to modify the suprarenin dosage.

*Breaking of the needle.* The use of an iridio-platinum needle minimizes the chances of this danger occurring. While strong enough to furnish the required rigidity, it will bend upon meeting a hard obstruction, thereby giving ample warning of danger. A long steel needle may break easily. Breakage of the needle occurs most frequently in mandibular injections, as in this anesthesia the one and one-quarter inch needle is used. In this location, however, an accident of this nature usually is due to lack of dexterity on the part of the operator, or his insufficient anatomical knowledge. Nevertheless, the needle may break without the operator's fault. For example, if the patient moves the head suddenly. While there have been cases reported where the needle remained imbedded in the tissues, apparently without causing trouble, it is of course the operator's duty to remove it, as complications may arise at a future period. The soft tissues on the internal surface of the ramus hide it from view. As a precaution against breakage, the operator never should bury the needle absolutely to the hub during injection, but should leave at least one-half of an inch in sight. If it is difficult to locate the broken part, a radiograph is indicated. This will show its exact location. To remove it, wait until the anesthesia is complete and definitely locate it by a transverse incision with a sterile lancet. It can then be pushed into view with a pair of pliers and removed.

*Idiosyncrasy.* It is impossible to recognize this condition in advance unless the patient offers information, and even then his experiences generally are due to cocain administrations. Fear is generally the chief factor to combat, and the operator's attitude has much to do with a successful result. The respiration may increase and perspiration show on the patient's forehead even when they are normal, but this condition is transient and need cause no fear.

Should the patient show alarming symptoms after the first prick of the needle, or should he complain of palpitation of the heart or a suffocating sensation, caution in proceeding further should be observed.

It should be borne in mind that idiosyncrasy easily may be confused with an abnormal psychological condition. Nervous or hysterical patients often present the same symptoms even before the injection is made. The attitude of the operator towards such patients has much to do with quieting them or disturbing them still more. We are apt to forget that the majority of people approach the dental chair under ordinary conditions with fear and trembling, and that the thought of an anesthetic tends to increase their excitement. Mental suggestion by the operator is one of the biggest factors for success.

*Shock and collapse.* Physical shock is of rare occurrence under local administrations, because the nerve fibres conveying sensations of pain

to the nerve centers are blocked and impressions cannot be transmitted. The patient's being conscious of the operation may lead to psychic or mental shock and a subsequent collapse. Hysterical patients and those influenced by fear and dread are therefore the most susceptible. With this type collapses often have been reported before the anesthetic was administered. In such nervous patients if the fear cannot be dissipated before the injection is to be made, the employment of a general anesthetic is recommended.

If signs of approaching collapse appear, they can be blocked oftentimes by the use of stimulants, such as whiskey or brandy. Camphorated validol in five to seven drop doses in a little water; aromatic spirits of ammonia, by inhalation or internally, ten to fifteen drops in water for mild cases; or the use of two or three drops of amyl nitrite by inhalation in serious affection, are excellent restoratives. Place the patient in a recumbent position with clothing loosened and have absolute quiet in the room. Plenty of fresh air and the application of cold cloths materially supplement the medicinal treatment. An ample supply of restoratives always should be at hand, for if needed at all they are needed quickly.

This list of failures, dangers and possible ill-effects embraces, we believe, all complications which may arise in the use of the novocain-suprarenin anesthesia. We have discussed them for the sake of completeness and not because they are of common occurrence. Seldom do untoward results occur. In our practice we have found them negligible.

The careful operator, however, is he who is prepared to meet all emergencies.

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#### Death of Dr. William W. Belcher

W. W. Belcher, D. D. S., editor of *Oral Hygiene*, died at his home in Rochester, New York, Thursday morning, December 4th, at ten o'clock. A fitting obituary will be published in the January issue.



## PREVENTION AND CONTROL OF VENEREAL DISEASES\*

BY LEON L. SOLOMON, M.D., LOUISVILLE, KENTUCKY

IT IS A PLEASURE to be present here this evening, aside from the lesson which I wish to bring to you from the government and the Kentucky State Board of Health.

During my twenty-five and more years of medical practice in the city of Louisville, I have noted a gradually-developing reciprocal feeling between dentists and physicians. I can recall the time, and it was not many years ago, when such a feeling did not exist, when the doctor took issue with the dentist and *vice versa*, with the ultimate result that the patient usually suffered.

It was to me a movement of unusual interest when the Jefferson County Medical Society invited a prominent member of the dental profession to deliver an address before one of its meetings. And I have a personal pleasure and pride in saying, it was through my influence that a closer bond of union was established between dentists and physicians, when a dentist was invited to the Louisville Public Hospital. Be it said to his credit, he came, bringing his own tools along, since the hospital did not have sufficient funds and the Board of Public Safety could not be persuaded it was proper for them to assume the expense of providing the necessary dental equipment. A gentleman of the local dental society, which I understand is an integral part of this Association, came on duty at the hospital, and much might be said in praise of the work which has since been accomplished there.

As dentists, you are aware that certain dyscrasiæ play important roles, both in development of the teeth and in their early decay. The diabetic individual has teeth which sooner or later exhibit evidences of disease; likewise, in so-called chronic Bright's disease, the teeth eventually show signs of that dyscrasia. Probably, none of the dyscrasiæ play so important a part in the production of dental lesions and early decay as the syphilitic. Long before the Wassermann reaction was known, it was possible to recognize inherited syphilis by the irregular serrated edges of the infant's teeth, and, as syphilis progresses, the dentist has many opportunities of recognizing it. His close scrutiny of the interior of the mouth enables him to note the early secondary lesions—the so-called mucous patches.

It must be said to the discredit of the members of the medical profession—and I am willing to take my share of the blame—that they have, throughout past generations, permitted venereal diseases to be

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\*An address delivered before the Kentucky State Dental Association, at Louisville, Kentucky, June 9th, 1919.

disseminated, without placing their stamp of disapproval upon the manner in which such dissemination was effected. As a matter of fact, even at the present time, it is difficult to persuade some physicians that we have a right to say to our patient with venereal disease, after making the diagnosis, that the disease is "reportable." There are still a few physicians who are unwilling to grant that the three venereal diseases are reportable, and this must be said to their everlasting shame and discredit. With a few exceptions, the rank and file of the profession realize that their obligations to future generations require that all communicable diseases be reportable.

As a member of the local medical fraternity, if I were to telephone the chief of police, the city health officer, the county health officer, or the president of the state board of health, and inform any of these respective officers (guardians of the public health as they are), that a train had arrived in Louisville on which there were known to be twelve individuals with bubonic plague, and that the conductor refused to take them further, I venture to say, that every instrument at the call of these respective officers quickly would be put into operation to gather in such twelve patients with plague and quarantine them. Were I to say, that twelve individuals with smallpox had arrived in Louisville, they would be quickly gathered in and transported to the eruptive hospital. And yet, among twelve hundred women, found on the streets of Louisville and taken into custody, as suspicious characters, within the last few months, more than ninety per cent. had one venereal disease, some had two, and some even three of the venereal in the acute, communicable stage.

No word, which I shall utter this evening, nor any picture thrown on the screen, must be considered obscene even by the most fastidious, though venereal diseases will be called by their right names. The lessons learned during the war taught us that no man with gonorrhea, chancroid or chancre, was fit to serve his government, and no man was permitted to enter the army who had either disease, if the authorities knew it, at least until that disease was well on the roadway toward recovery. France, England, Germany and Austria paid a tremendous debt, in point of incompetency and inefficiency of their soldiers, because so many of them had venereal disease. Let it be said to the everlasting credit of the United States Government that this was not true of the American soldier, sailor or marine. We learned, before sending our men overseas, that no man was fit to fight who had venereal disease. And if no man is fit to fight the Kaiser with venereal disease, certainly no man is fit to fight the "Fight of Life" with such disease.

Our hospitals, asylums, madhouses, blind institutions and epileptic colonies are filled to overflowing with patients who are paying the penalty of syphilis. "The civilized world is rapidly becoming syphilized." In every community, may be found so-called "blue-blooded" men and



women, whose blood or spinal fluid may show a two, three, or even four-plus Wassermann.

The time has come when the veil of secrecy must be lifted from venereal diseases and the people informed concerning their dangers. It is unfair, when a man comes to your office, to have his teeth examined, and mucous patches are found in his mouth, for you to allow him to go home and kiss his wife, communicating syphilis to her. It is unfair, when a man comes to the office with gonorrhea, and, because he understands that "in the secret confines of the consultation room all that passes between you and him is as sacred as if said to the father confessor," for you to dismiss him without explaining the dangers of transmission of the infection to others. The time has come, when it is no longer proper to shield men and women, who have venereal diseases, and permit them to sow broadcast the seed of their own destruction.

The United States Public Health Service is that medical part of the government, which, in times of peace, plays an important role. I may explain there are three medical departments of the United States Government. In addition to the Surgeon General of the Army and the Surgeon General of the Navy, we have a Surgeon General of the Public Health Service, the latter under the jurisdiction of the Treasury Department. This department acts as a bureau for dissemination of information to the public and shields the public from danger. Rupert Blue, Surgeon General of the Public Health Service, must be given credit for developing the idea of fighting venereal diseases in peace times. One million dollars was set aside for this purpose during 1918-19, and a similar sum, for use during 1919-20, under what is known as the Kahn-Chamberlain Act. Of that amount Kentucky received, based on her population, the sum of twenty-five thousand dollars. It is a part of that money which we are spending tonight, in showing you these moving pictures and stereopticon views. This is our propaganda. We are here to show you the importance of venereal disease prevention, because you gentlemen of the dental profession wield a powerful influence in your respective communities. And, because society in general, is not yet quite ready to render us the assistance we deserve at their hands in our fight to eradicate the venereal diseases, we come to you for help. Our purpose certainly is correct, and we believe our plan of campaign also is correct.

I want you gentlemen to know, I am not a venereal disease specialist, but an internist. I have offered my services, *gratis* to the government, in the prosecution of this work, believing I may render service along practical scientific lines. The venereal disease fight is not from the moral but the scientific point of view. Man's conscience plays little or no part in the sex question. From the very beginning of time, man has broken the divine command, "thou shall not commit adultery." Our purpose is to make it so plain to both men and women—through the

lessons we shall bring before them illustrating the penalty inevitable—that promiscuous sexual intercourse shall be limited, if not cease.

I feel disposed to say to you gentlemen, who belong to a profession so closely related to medicine, that I do not believe such a thing as *cured* syphilis every is, ever was, or ever will be. In 1895, I had the opportunity of studying this question with Prof. Max Joseph, of Berlin; his firm conviction was that syphilis can be cured, though I then as now disagreed with this view. It must be remembered, that though syphilis is a dreadful disease, men get well (not cured) with such rapidity, that they forget they have been infected and cease taking treatment. In proof of the fact that the disease only is partially cured by treatment, men have paralysis, locomotor ataxia, choked disc and a host of other so-called tertiary signs familiar to every medical man notwithstanding most positive treatment. I have yet for the first time to say to a syphilitic, that I would consider him absolutely cured. People apparently recover from syphilis it is true, but they do not remain well unless they continue treatment.

Can you imagine a man being inoculated with smallpox virus and then, by any single device or agent you be able to take away from him the toxin which grants him the immunity he thus obtains? When a man is infected with syphilis, he thereafter carries something in his system, which sooner or later will manifest itself in the development of certain symptoms. Prof. Joseph, the only authority I know, who claims to have treated a man twice for an "initial lesion" of syphilis. He stated to me that a man he had "cured" of syphilis, a year or two later returned with a second initial lesion. When I disputed this he said I was a "frecher Amerikaner"—a "fresh American." The German whom we recently helped to thrash deserves much credit for our more exact means of diagnosis and our more exact therapy. They produced Wassermann, who made it possible to demonstrate in the blood the presence or absence of acquired or hereditary syphilis with almost absolute certainty; they produced Ehrlich, who gave us salvarsan the value of which, in the treatment of syphilis, is too well recognized to require comment.

Unfortunately, it is true of a woman that she gets her sense early or she never gets any. It is equally true, unfortunate though it be, that a man never gets his sense until he is so old it does him no good. When it comes to the question of the sexual relation, man never has had any sense and never will have. By the laxity of public feeling, both men and women have heretofore been permitted to disseminate venereal diseases without hindrance. We propose now that this shall cease. What is our order of procedure? In the prevention or eradication of venereal diseases, what shall be the mode of action? How are we going to handle the problem? These are present questions. We are going to strike at the root of the evil; condemning the seed, we propose to destroy it.



When a man with venereal disease applies to a physician for treatment he will be given a record number. His name still remains unknown to the public as before and unknown to the authorities provided he abides by requirements. In the event he fails to meet the requirements, his name is given to the venereal disease control officer of the state, who emphasizing that he has a communicable disease and is not abiding by the regulations, proceeds to quarantine him. There are "ten commandments" prescribed by the government and practically every state in the union has sworn allegiance to these commandments. One of the regulations requires the report of the patient with venereal disease and quarantine of him who disobeys and runs at large.

A lady thirty-seven years of age came to my office a few days ago for examination and diagnosis. We made an unusual diagnosis in her case; it was an accurate diagnosis, unusual because the ailment was unusual. She had an aortitis, as shown by clinical investigation and confirmed by X-ray. We know that syphilis is one of the most common causes of aortitis. I remember hearing Prof. John A. Ouchterlony make the remark, more than twenty-five years ago, that the best way to make the clinical diagnosis of aortitis was to pass the fingers downward behind the upper part of the sternum, making pressure which always caused pain. This woman flinched when slight pressure was exerted over the upper part of the sternum. Her blood Wasserman showed positive three-plus. I asked her to send her husband to see me, that I wanted to talk with him about her treatment. We are in the habit, today, when we find evidence of syphilis to proceed to immediate action. This woman was in my office on Sunday morning. On Monday, a man walked into the office and shook hands with me. After a few minutes, I recognized him as a waiter, who had served me many times in a local restaurant. It was noted at the time, that he had an eruption on his hands and face. Further examination disclosed on his body not only a macular eruption, but a papular, squamous, versicular, pustular, ulcerative eruption. I, of course, asked if he was still employed at the restaurant, and he replied "no," that the head waiter had caused him to be dismissed on account of his rash, that he was working for a local industrial organization. I immediately telephoned and asked them not to discharge the man as he had a wife and four children to support, but if they felt impelled to dismiss him, to pay him two or three weeks salary to take care of his family, through their welfare worker, until we could render him no longer "infectious." We gave him a dose of salvarsan, repeating within four days, a larger dose; and within a week, the eruption had disappeared, with less likelihood of his communicating the disease to others with whom he came in contact. Such cases are sometimes troublesome to manage. The moment that the patient fails to report to the office at the prescribed time, I write him calling attention to the fact that if he does not report, as requested, he renders himself liable to quarantine. And let

me say to you, gentlemen, that quarantine is a terrible weapon to hold over a man.

Quite recently, an army officer was accused by a young woman of poisoning her with strychnin. She was taken to the Louisville Public Hospital, where it was discovered that she had not been given strychnin. It developed that the man she had accused was her lover and was about to leave for the west; that she did not want him to go, and this was her way of keeping him in Louisville. Though the woman was "shamming" she had succeeded in having her gay Lothario arrested and held until he could prove he was not guilty. The circumstances looked suspicious to us and we concluded to examine them both more thoroughly, with the result that both were found to be venereally infected; therefore, both were placed in quarantine until they ceased to be "carriers."

Let me ask you as educated, self-respecting, honorable, high-minded professional gentlemen, is it right, that people of that kind should be permitted to run at large? If you believe it is right, then I have nothing further to say. But it seems to me the time has come, when we should take the necessary steps to prevent the spread of venereal diseases.

There recently was held in an eastern city, a mask-ball at which young men and young women perhaps took greater liberties than would have been considered proper otherwise, because they were in mask. Young people will kiss, as you know, until the end of time, but probably they do not frequently osculate as promiscuously as they did on this occasion. The final outcome of this mask-ball was that twenty-six girls had twenty-six chancres on twenty-six lips. There were twenty-seven girls present and all became infected with one single exception. Later investigation demonstrated that one young man, who had a chancre on his lip, was responsible for spreading the infection. This unfortunate occurrence teaches the important lesson that persons with such communicable diseases should be quarantined, until they are no longer capable of transmitting the infection to others.

What are we going to do in the matter of treatment? Suppose, for example, that a man does not want to go back to Dr. Smith or Dr. Jones to be treated? He may consult as many doctors, as he wishes, provided they are legitimate practitioners of medicine. He merely takes his card (bearing a serial number) with him and states that he has been under the care of Dr. Smith, but now wishes to consult another physician. Dr. Blank then communicates with Dr. Jones or Dr. Smith stating that the holder of card number so-and-so has applied to him for treatment. The private or charity patient need not be deprived of his liberty, so long as he obeys instructions, but he cannot travel from one state to another without having a license from the health office, and he will be quarantined if he disobeys his doctor's orders.

I believe, if we proceed persistently along these lines, we finally will succeed in eradicating venereal diseases, but it will take a long time to



accomplish it at best. The government has set aside the necessary funds for our immediate needs, and I want to ask you gentlemen, when you go to your respective homes, to pass this propaganda along for the benefit of the people in your communities. Any money spent next year will have to be furnished by the state, if the government is to provide an equal sum. I am spending the twenty-five thousand dollars, already contributed by the government, according to my best judgment, giving especial attention to acute syphilis, chancroid and gonorrhea. We are interested in the man who has locomotor ataxia or other late manifestation of syphilis, but we are chiefly after the fellow who has the disease in its communicable form.

Not long ago, a young woman arrested on the streets of Louisville, had the previous night lain with thirty soldiers, giving seven of them gonorrhea. Later investigation showed that one of these soldiers, on a furlough, had transmitted gonorrhea to his wife, who, in turn, transmitted the disease to her five children in the form of gonorrheal ophthalmia. In the name of God, how long are we going to allow such things to happen? Is it not time we put the seal of our disapproval on such unfortunate happenings? It may be a long, hard fight, but the ultimate result is worth our while. We are certainly going to accomplish something by persistent work. Our plan is to strike immediately, to strike hard, and to strike continuously.

We are not going to bother with the elderly man with enlarged prostate gland or bladder irritation, the result of the "follies of his early life;" nor are we after the man with late secondary or tertiary manifestations of syphilis. We are after the man in the early stages of venereal disease, the man who is still virile and capable of communicating the disease, the man who is more venomous than a rattlesnake and more dangerous than a mad-dog running at large.

In closing I venture the prediction, that, in every county in the state of Kentucky—and, for that matter, in every county in every state in the union—before long, there will be a hospital for communicable diseases, of which syphilis, gonorrhea and chancroid are each one. In such hospitals, with separate pavilion, may be treated, not only venereal diseases, but erysipelas, measles, smallpox, diphtheria, etc., etc.

We want you, gentlemen, to go to your homes imbued with the idea that the time has come to make an effort to eradicate and prevent venereal diseases. Man, the highest of all animals, is the only animal who has venereal disease. I expect later to see many of you in your respective counties, as I shall visit every town in the state on this important work before I have completed my task.

# CORRESPONDENCE

## PREPAREDNESS LEAGUE OF AMERICAN DENTISTS FRENCH-BELGIAN FUND

Drs. Villain, Davenport and Burkhart, of Paris, have signified their willingness to act as a commission to represent the Preparedness League of American Dentists in distributing the funds raised for the benefit of our French and Belgian brother dentists. They will collaborate with the Aide Confraternelle, a society of French and Belgian dentists organized to render aid to those of our profession who have suffered so severely from the ravages of war.

Through these channels, we are assured that our funds will be carefully and conscientiously administered.

Before this will appear in print, we will have forwarded the amount already raised and hope to have a report to publish in the January journals.

We earnestly urge all societies contemplating giving to this fund to arrange to do so as early as possible in order that aid may be given when most needed. While we are enjoying the era of our greatest prosperity as a profession, let us not be unmindful of our less fortunate brothers and accept this opportunity as a privilege whereby we may express our gratitude for the blessings we are now receiving.

Individual contributions are solicited, also, and it would be a source of much satisfaction to the League to present to our French and Belgian brother dentists a long list of American contributors. In no other way could we do more to cement the bonds of lasting friendship than by showing ourselves to be real friends in need. As Cartoonist Briggs might say:

"Ain't it a grand and glorious feeling" to give a boost "When a feller needs a friend?" This kind of real American fellow-feeling is legion and, as individuals, we should make our friends across the sea realize it to the fullest degree.

We quote the following from a recent letter from Dr. Georges Villain:

Paris, le 15 Octobre, 1919.

Mr dear Confreeree:

I have communicated to my colleagues of the Bureau of the Society of the School and the Dental Dispensary of Paris, your letter of September 15th.

My colleagues are very happy to know the result already accomplished by the subscription of which you are so devoted an originator and which you destined through l'Aide Confraternelle for the French and



Belgian dentists, victims of the war. I wish also to send my grateful personal thanks to your Leagues.

I accept the honor which you have conferred upon me in asking that I join with Dr. W. S. Davenport and Dr. Richard Burkhart, the committee representative of the Preparedness League of American Dentists, also the Fraternal League of French Dentists and Belgium victims of the war.

Many thanks for the aid which you have given our confreres and will endeavor to support you to the best of my ability on this side of the ocean.

Accept my sentiments of sincere friendship,

GEORGES VILLAIN.

#### AN ACKNOWLEDGMENT

The following letter was recently received in reply to one from the president of the League in reference to a communication by Dr. Benoist, which appeared in THE DENTAL SUMMARY of recent date. Although it is unfortunate to be misunderstood, yet in the final analysis it oftentimes results in establishing harmonious relations of a most satisfactory character.

E. Benoist Fils Chirurgien Dentiste.

PAU, I RUE SERVIEZ.

Dr. J. W. Beach, Buffalo, N. Y.

My dear Doctor: I received this morning your letter of Septembre 22nd.

I read with very great pleasure that the American Dentists wish to do the best they can for their unhappy French brothers; indeed, I always knew that American hearts were generous ones.

You will excuse me for having misunderstood the spirit of your efforts and you will accept my thanks for the great effort you have done to help our French unhappy brothers, victims of the Huns.

Believe me sincerely and fraternally yours,

BENOIST.

Make all checks payable to Dr. L. M. Waugh, 576 Fifth Avenue, New York, N. Y.

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#### FINAL DECISION OF THE CARR CASE

In the United States Circuit Court of Appeals, for the seventh circuit. No. 2704. October term and session, A. D., 1918.

The Carr School of Preventive Dentistry and Medicine, *Plaintiff-Appellant*, vs. Austin F. James, *Defendant-Appellee*. Appeal from the District Court for the Northern District of Illinois, Eastern Division.

Before Baker, Evans and Page, Circuit Judges.

Appeal from the decree dismissing a petition charging appellee with infringing Patent No. 1,138,355, relating to dentist's tools.

Page, C. J.—Errors relied on are that the Court erred in not holding:

I. That Claim 2 of the Patent in suit is valid and infringed.

II. That the infringement amounted to unfair competition.

Claim 2 is as follows: "Tools for the treatment of teeth comprising a series of straight handles, each tool adapted for use upon a predetermined shaped portion of the tooth and each having a cutting edge and a guiding portion, the guiding portion serving to engage with the tooth in advance of the cutting edge to steady the same, and the cutting edge being in the line of axis of the handle whereby the instrument has no tendency to turn when in use, and planes as contradistinguished from scraping the surface."

Stripped of all verbiage, the claim is:

*First*, for a guiding portion of the tool to touch the tooth in advance of the cutting edge.

*Second*, for a cutting edge in line of the axis of the handle.

I. The Specifications do not tell how this "guiding portion" is made or where it is or should be located. An examination of Figures 10, 11, 12, 13 and 14 in the Carr Letters Patent, conclusively indicate that the "guiding portion" is not and cannot be definitely fixed anywhere but is merely the necessary contact between the side of the tooth and the side of the instrument. In Figure 14, there is no contact at all and in his testimony, patentee Carr said that in some cases, without proper adjustment of the angle of the cutting bit or blade, there could be no rest or "guiding portion."

In addition to this, the uncontradicted testimony shows that many dentists used the same sort of contact and that resting the instrument against the tooth was, in most cases, unavoidable. If further appears that in this respect there is no appreciable difference between the Carr tools and the construction of the Cravens tools and many others testified about and in evidence, made and used long before the Carr Application was filed.

II. While on first reading, the language "the cutting edge being in the line of the axis of the handle" seems simple, it will not stand analysis. The cutting edge is a line and if the language means anything, it means that that line, in construction and use, is merely an extension of the longitudinal axis of the handle.

An examination of the Carr tools shows that no tool is constructed on this plan. If any one such tool would be of use in dentistry, Carr did not make it, and one hundred and fifty such tools, as contemplated by appellant for a set, would evidently be purposeless.

If the language means that the line indicating the cutting edge is at right angles with the longitudinal axis of the handle so that the point marking the center of the line would be touched by an extension of the longitudinal axis of the handle, it will be found to be true in only one or



two instances in the Carr tools, but it was and is also true in the Cravens, and numerous other tools made and used long before the alleged Carr invention.

What the language was probably intended to mean is that the center of the cutting edge is in line with the longitudinal axis of the handle. An examination of the tools in evidence shows that this is probably true generally and it also shows that in a great majority of the instruments, the cutting edge is so made that in use the tool is not pulled directly toward the operator, but must necessarily be operated by pulling or pushing against the side of the tool. If pulled directly toward you, as a Japanese plane is operated, it would neither scrape nor plane, but would merely scarify the tooth by drawing the cutting edge quartering across it. This would be a useless device.

The decree of the District Court is affirmed.

A true Copy.

Teste:

(Signed)

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*Clerk of the United States Circuit Court of  
Appeals for the Seventh Circuit.*

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## PUBLIC SCHOOL DENTAL CLINICS

EDITOR DENTAL SUMMARY: At the request of the Committee on Oral Hygiene of the First District Dental Society, of the State of New York, I have prepared the enclosed letters for the purpose of urging the need and ultimately the establishment and operating of a Free Dental Clinic in every public school of the City of New York.

The adoption of this plan of procedure by the First District Committee was followed by the adoption of the same plan by the Oral Hygiene Committee of the Second District Society, of the State of New York, and at a joint meeting of these committees, on September 26, 1919, I was requested to communicate with you stating that in the opinion of these committees, the publication of these letters in the dental magazines of the country, would be the best way to impart to other societies, who surely are interested in this subject, our way of dealing with this question.

May I hope that you will be good enough to give space in your Journal to this matter?

Thanking you in advance, I am,

Respectfully,

ARTHUR ZENTLER,

*Secretary, Oral Hygiene Committee.*

Rev....., New York City.

Reverend Sir: The Committee on Oral Hygiene of the First District Dental Society of the State of New York, wishes to respectfully lay before you the crying need of safe-guarding the general health of public school children through taking care of one of the most common avenues of disease into the body, the mouth of the child.

The deplorable condition of the teeth of the majority of school children, is common knowledge to those who have paid even the most superficial attention to matters of Oral Hygiene. The difficulty of coping with this situation through the ministration of the private practitioner, has again and again been proven, and the organized dental profession has long ago come to the conclusion that the most expedient and the most effective way to take care of the teeth of the children of the community is by having free dental clinics in the public schools, installed and operated by the municipality. A number of free dental clinics, unfortunately much too small, to reach the large need, but sufficiently to prove the great benefit derived from them, have been in operation for about seven years and the copies of original letters from principals of schools where such clinics now exist, printed in the enclosed bulletin, are vivid testimony as to what it would mean to all school children if each school would have a dental clinic.

This committee greatly appreciates the importance of an expression of opinion on your part in these matters, and that an appeal from you to the Alderman of your district, to the Commissioner of Health, and to his Honor the Mayor, will, in a great measure, aid the efforts that are being made at this time by this committee, to have the municipal authorities equip and operate a free dental clinic in every school.

May I, in the name of this committee, respectfully request you for a letter, expressing your views in the matter, and may I hope that you will kindly take the first opportunity to address your Alderman, the Commissioner of Health, Dr. Royal S. Copeland, and the Mayor, in behalf of the free dental clinic in the public schools?

May this committee further appeal to you with the request to interest in the matter, the members of your church, the various benevolent societies of your parish requesting them to appeal to the city authorities for the free dental clinic in each school.

In the name of the committee on Oral Hygiene of the first district, the legal branch for the section of the Dental Society of the State of New York, representing over fifteen hundred dentists, I beg to extend to you my profound thanks in advance, for whatever you may desire to do for this most deserving cause.

Respectfully,

*Secretary, Oral Hygiene Committee.*



Mr....., principal, P. S. No. ...., New York City.

Dear Sir: The Committee on Oral Hygiene of the First District Dental Society of the State of New York, is, at the present time, making a supreme effort to have the municipal authorities equip and operate in every school in the City of New York, a free dental clinic.

Will you lend us your support to this end?

Will you address to each of your teachers a letter, as per form, herein enclosed, requesting them to have each pupil in their class copy in their own hand writing, the letter addressed to the Alderman, and have their parents sign it, returning to you the signed letter in a stamped and addressed envelope?

Will you finally see that these envelopes are properly mailed?

It is the opinion of this committee, that such aid as the school principals only, can give this committee in this work, is of immeasurable value and that if faithfully and universally carried out, will lead to the establishment of the much needed dental clinic in every school.

If by chance, you yourself, or any of the teachers in your school, should happen not to be convinced of the great benefit which your school would derive from a free dental clinic, the perusal of the copies of original letters from principals of schools where free dental clinics have been in operation for several years, printed in the enclosed bulletin, may be interesting and profitable reading to you. May this committee request you to carefully read them?

In conclusion may I ask you, in the name of the committee, to inform me what action, if any, you have taken as a result of this letter, and believe me,

Yours very truly,

*Secretary, Oral Hygiene Committee.*

Sir or Madam: Will you please write on the blackboard the following letter to be copied by every pupil in your class:

"Hon....., Alderman, District No....., N. Y. C.

Dear Sir: I have heard of the great benefits derived by children going to schools where free dental clinics are in operation and have heard that more such clinics are going to be established.

May I not appeal to you to use your influence for a free dental clinic in P. S. which my children attend."

This letter should be signed by the parents, placed in an envelope, addressed, stamped by the pupils and returned to you.

Will you then turn over to me these letters, so that I may see that they are properly mailed?

A decorative border featuring a repeating pattern of stylized leaves and vines, framing the central title.

# EDITORIAL

## THE NATIONAL DENTAL ASSOCIATION

The twenty-third annual session of the National Dental Association, in New Orleans, October 20th to 24th, 1919, was one of the best ever held. The attendance was large and the presentations instructive.

The essays and lectures showed that an increasing amount of research work is being done and that dentists are in earnest about getting to the bottom of things to learn the truth.

Dr. Harold K. Box, Toronto, Canada, in his paper, "The Dento-Cemental Junction," told the results of his investigations of these tissues which will radically change our ideas regarding nourishment of the tissues of the teeth.

The report of Arthur T. Henrici and Thomas B. Hartzell, Minneapolis, on The Value of Blood and Urine Examinations in Dental Practice and The Relative Frequency of Bacterial Invasion of the Vital Pulp; its Explanations and Source, showed that these men have been doing valuable research work along these lines.

Dr. P. R. Howe, of Boston, read an excellent paper on "Nutrition in Relation to Dental Diseases." Dr. Howe is another man that is doing some noteworthy investigating.

Dr. Arthur Black, Chicago, in his illustrated lecture on The Prevention of Chronic Mouth Infection gave the dentists much "food for thought," and Dr. C. E. Kells, of New Orleans, gave a splendid presentation on the X-ray in Dental Practice.

The presentations in the Prosthetic Dentistry and Crown and Bridge-work Section, by Dr. G. H. Wilson, Cleveland, Dr. J. Leon Williams, New York, Dr. J. P. Ruhl, New York, Dr. M. M. House, Indianapolis, Dr. P. C. Lowery, Detroit, Dr. E. T. Tinker, Minneapolis, Dr. L. J. Weinstein, New York, Dr. A. L. LeGro, Detroit, Dr. Norman B. Nesbett, Boston, Dr. W. Helliott, Detroit, Dr. G. S. Monson, St. Paul, and the clinics on this subject by Dr. D. D. Campbell, Kansas City, Dr. Rupert E. Hall, Chicago, Frank M. Wadsworth, Minneapolis, Dr. R. H. Volland, Iowa City, and others, showed conclusively that great advancement has been and is being made along these lines and that the scientific enters largely into the successful restorations.

The subject of "Apicoectomy" was well treated by Dr. Thomas B. Hartzell, Minneapolis, who gave an illustrated lecture on "Its Indications and Contraindications and Root Canal Technic," and by Dr. Chalmers J. Lyons, Ann Arbor, who illustrated with stereopticon slides his lecture on the "Surgical Technic of Apicoectomy;" Dr. Geo. B.



Winter, St. Louis, gave an instructive lecture on "Impacted Lower Third Molar."

An interesting symposium on "Block Anesthesia" was presented by Dr. E. A. Litchfield, Humbolt, Neb, Dr. S. L. Silverman, Atlanta, Dr. F. M. Molt, Chicago and Dr. P. G. Puterbaugh, Chicago; in the Section of Orthodontia and Periodontia and other sections, many more interesting and instructive papers were read.

Major H. D. Gillies, Medical Corps, British Army, Queen's Hospital, Sidcup, England, gave a splendid address on "War Oral Surgery."

In the Section Mouth Hygiene and Public Service, the papers on: "Dental Service for the other eighty per cent.," by Dr. G. Millberry, San Francisco; "Pediaodontia," by Dr. P. R. Thomes, Minneapolis, and "Solving the Mouth Hygiene Problem," by Dr. Otto U. King, Chicago, were of special interest.

There was an Exhibit of the United States Public Health Service, and in addition addresses were given and a number of health moving pictures were shown. Some excellent clinics were given and the Dental Dealers and Manufacturers had a splendid exhibit.

It was a great meeting, despite the hot weather, and will long be remembered by those fortunate enough to attend.

The next annual session will be held in Boston, September, 1920.

### Greetings and Best Wishes

The editor and publishers of The Dental Summary extend to  
all, the Season's Greetings with best wishes for a  
Happy and Prosperous New Year

# SOCIETY ANNOUNCEMENTS

## Alpha Omega Fraternity

The Twelfth Annual Convention of the Alpha Omega Dental Fraternity will be held at Washington, D.C., on December 28, 29, 30, 1919.

Very truly yours,

S. H. Bomenblit, D.D.S.,

*Supreme Scribe.*

2459 North 16th Street, Philadelphia, Pa.

## Montana State Board

The Montana State Board of Dental Examiners will hold regular examinations at Helena, Montana, January 12, 1920. Applications should be in the hands of the Secretary at least ten days before the examinations.

Helena, Mont., Nov. 8, 1919

T. M. HAMPTON, D.D.S., *Sec'y.*

Helena, Montana.

## RESOLUTIONS ON THE DEATH OF DOCTOR NEWELL STILL JENKINS

*Whereas*, The members of the National Dental Association having learned of the death of Dr. Newell Still Jenkins; and

*Whereas*, The name of Dr. Jenkins having been associated with all that was highest and best in dental practice for many years; and

*Whereas*, His long service in Europe and his wide knowledge of men and events having given him an international reputation second to none; and

*Whereas*, His delightful and charming personality added to his ability as a practitioner, made him a commanding figure in the profession. Therefore be it,

*Resolved*, That this Association places on record its high appreciation of his many sterling and lovable qualities, and its sorrow at his decease; and be it further

*Resolved*, That a copy of these resolutions, as an evidence of our affection and as an expression of our sympathy, be conveyed to the family of Dr. Jenkins, and preserved in the minutes of the Association.

TRUMAN W. BROPHY,  
WALDO E. BOARDMAN,  
HOMER C. BROWN, *Chairman*,  
National Dental Association Committee.



# SUGGESTIONS

CONDUCTED BY F. R. CHAPMAN, M.S., D.D.S., COLUMBUS, OHIO

(To Our Readers: Give others the benefit of your practical suggestions by sending a description of them to Dr. F. R. Chapman, Schultz Building, Columbus, Ohio.)

## A Dentist in Siberia

WRITTEN FOR THE DENTAL SUMMARY

Under the direction of Frank V. Nemecek, a graduate of the New York College of Dentistry, the American Red Cross is rendering a most necessary service to the Czechs, and also to the Russians, in Irkutsk, Siberia. The Czech Dental Clinic, which was originally started in Ekaterinburg, moved to Irkutsk when the First Division of the Czechs abandoned the western city. On April 1st the clinic opened, and between that date and September 1st, more than eight hundred patients were treated, 2,012 artificial teeth made, 1,387 teeth extracted, and 997 teeth filled, not including other dental work and minor operations that come under the head of dental surgery.

Dr. Nemecek has half a dozen assistants in the office and laboratory of the clinic. The office is furnished with three chairs and accompanying instrument stands, and the fittings are most complete and modern. What such a clinic means to people in Siberia cannot be appreciated by people at home where there is a D.D.S. in every street. The dental profession should have its full share of credit for its important part in the humane work that is being done by the American Red Cross in Siberia, as well as among other destitute and suffering peoples in Eastern Europe.

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## Setting of Small Inlay Bridges

Owing to the slight movement of the teeth carrying the inlays of small bridges, one of the inlays will very often move. To overcome this, the two methods I have found most successful are as follow:

*First*, where there is heavy pressure, one inlay is anchored deeply, at the other end of the bridge; a flange is carried into the inlay, the inlay having been prepared to receive it. This free end is not cemented, and allows for any slight movement of the teeth and receives its due amount of pressure.

*Second*, where the inlay bridge may carry a central or lateral, and having pressure from in outwards, one inlay is set with cement, the other inlay is roughened slightly and set with a small layer of white base-plate gutta-percha. This small layer of base-plate gutta-percha acts as a cushion to overcome the movement of the teeth and takes up any sudden pressure.—*Basil Jones, Commonwealth Dental Review.*

## THE DENTAL SUMMARY

### Conservatism in Extracting

Where systemic symptoms point for a cause to pulpless teeth, I would extract them and where pulpless teeth are all important, I would retain them up to the time that I was well assured that they were a menace to bodily health. If you continue to practice dentistry you must continue to at least try to save pulpless teeth. You cannot extract all of them, but you can show wisdom by studying when to extract them and then boldly act upon your judgment. *Fanatical* doctors and dentists extract *all* pulpless teeth; *rational* doctors extract *some* of them. Some of the fanatics recommend the extraction of all the teeth for fear that they may do some harm, like the Dutchman who licked his son when he was good so that he would stay good.—G. S. Junkerman, *Dental Facts*.

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### Securing Canal Broaches.

To prevent dropping short canal broaches into the throat, always apply the rubber dam before using, covering enough teeth to furnish ample space for manipulating the broach. If for any reason the dam cannot be adjusted, tie a wax ligature to the hub, and leave enough ligature to extend well out of the mouth. This will allow of all proper manipulation, and render it possible to rescue the broach in case it slips out of the finger grasp, and prevent its dropping into the fauces. A piece of orthodontia wire can also be attached to the hub of the broach, but it does not give as much freedom in manipulation.—*Dental Register*.

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### Notice of the Annual Meeting of the Dental Protective Association of the United States

The Annual Meeting of the Dental Protective Association, of the United States, will be held at the Palmer House, State and Monroe streets, Chicago, on the third Monday of December, the 15th, at 4 P. M. sharp. The report of the officers will be given; a board of directors will be elected, and such other business transactions as should come before the Association.

All members are urgently requested to be present.

By orders of the Board of Directors,

J. G. REID, *President*

J. P. BUCKLEY, *Vice-president and secretary*.



# NEWS and OPINIONS

CONDUCTED BY G. E. HARTER

## LACONIGRAMS

Dr. K. Horie, of Tokyo, Japan, professor of dentistry at the University of Japan, is visiting America in the interests of advanced methods of education.

Dr. Frank L. Bostwick, an American dentist, graduate of U. of P., who has been the personal dentist to King Alfonso of Spain since that lonely monarch was a school boy, and who also has had under his care the sacred persons of three sultans of Turkey, is visiting old friends and relatives in the United States.

Dentists, doctors, nurses and pharmacists in New York are threatening to discontinue practice in that state should the new medical law now being considered in legislature become operative. The law provides for universal health insurance and limits the fees that may be charged, and are to be paid by employers and employees jointly.

Major H. D. Gillies, of Sidcup, England, is now in this country, addressing dentists and surgeons on plastic surgery as practiced during the war. Major Gillies was in charge of the largest British reconstruction camps, and illustrates his talks with slides made from 125 cases upon which he operated personally. Some of the results are almost beyond belief, even of those who are more or less familiar with the wonderful work that was performed.

Among the many features to be found at the National meeting at New Orleans, none was more gruesomely interesting than the section devoted to plastic facial surgery undertaken for the restoration of features destroyed by hun frightfulness during the war. Under the auspices of the Government, the exhibit, composed of plaster and wax masks, photographs, charts and devices of many kinds, was sent to demonstrate the recent advances in dentistry and surgery in rebuilding such faces. Many of the results shown seemed almost magical, and illustrated forcefully the almost limitless resources of the allied professions. One of the men in charge of the exhibit is Captain E. P. Dameron, of the Cape May Hospital, N. J. We are glad to be able to present an article from his pen in this issue.

The Attorney General of the State of New York is pushing the campaign against licensed and unlicensed dentists in that state who are unfit to practice, by reason of ignorance, unscrupulousness or both. Among the sins charged to the account of these men are—extracting teeth to add to the number of bridge teeth, at a price per tooth, building bridge work upon teeth infected by pyorrhea, faking

the public by advertising a low price and advancing this price with the victim's ability to pay.

Really the licensed practitioner who practices that sort of dentistry is the greater rogue of the two. The unlicensed man can be apprehended and convicted, but in the absence of evidence to indicate the aiding or abetting of illegal practice by another, the licensed man is suffered to continue.

R. H. Roneberger, D.D.S., announces the removal of his office to Suite 938-942 Arcade Building, Eighth and Olive Streets, St. Louis, Mo.

It will be remembered that at the regular session of the Nebraska Board of Examiners last spring, one hundred of the students were caught "cribbing," and barred from further sessions. Sometime in July, a special session of the Board was held, when all but fifteen of the delinquents passed. The legality of this special examination having been questioned, the Attorney General's office was appealed to, and the legality of the examination has been upheld. Licenses must be issued to those who passed at the special session, and they must pay the total expense of the session, between \$400 and \$500. This means that each of those re-examined must pay \$5 in addition to the \$20 paid for the regular examination in June, and that each of those who passed the second session will be entitled to practice in the state, precisely as though he had passed regularly. Seems as though the laws in Nebraska need amending.

Judging by the letters that are reaching this desk, interest in the dental education of the layman is being vigorously revived in many parts of the country. THE DENTAL SUMMARY still is able to supply outlines of lectures, with lantern slides for illustrating same, to all interested. The manuscript is supplied without charge, and the slides at before-the-war prices.

Dr. J. B. Farrell, director of the Department of Oral Hygiene, state of New Jersey, reports that the work of the Clinic is meeting with great success.

Following is a record of the work actually accomplished at the dental clinics during the month of October:

Number of new examinations....	1510
Number of completed cases....	148
Number of fillings.....	211
Number of treatments.....	84
Number of extractions.....	907
Number receiving treatment....	880
Number of cleanings.....	362
Number of homes visited.....	165

## THE DENTAL SUMMARY

The pamphlet distributed to the pupils containing advice for both pupil and parent printed in English, Italian, Polish and Jewish contains the following instructions:

How can we remove all the food from all the surfaces of all the teeth after each meal?

1st.—By brushing.

2d.—By using silk floss between the teeth.

3d.—By thoroughly rinsing the mouth with lime water.

### RULES TO REMEMBER

1st.—Brush teeth four times a day. Before breakfast, with clear water. After each meal, with a tooth paste or powder. The teeth must be clean and free from food before going to bed, as most of the decay takes place while sleeping.

2d.—Brush two minutes each time. Two minutes by the clock. It takes two minutes of brushing to properly stimulate the gums and thoroughly cleanse the teeth. Be sure and brush the gums.

3d.—Do not use pressure with the brush. A fast, light stroke is the best. A brush should never be worn out by having its bristles flattened and spread out.

4th.—Never allow anyone to use your brush. Disease germs may be easily carried from one mouth to another, readily causing sickness.

5th.—Candies, sugar, crackers, cake, pastries, bread, will all decay the teeth if allowed to remain on their surfaces.

### DON'T'S FOR SCHOOL CHILDREN

(Reproduced by courtesy of Department of Health, Providence, R. I.)

Do not spit if you can help it. Never spit on a slate, floor or sidewalk.

Do not put the fingers into the mouth.

Do not pick the nose or wipe the nose on the hand or sleeve.

Do not wet the fingers in the mouth when turning the leaves of books.

Do not put pencils into the mouth or wet them with the lips.

Do not put money into the mouth.

Do not put pins into the mouth.

Do not put anything into the mouth except food and drink.

Do not swap apple cores, candy, chewing gum, half-eaten food, whistles or bean blowers, or anything that is put into the mouth.

Never cough or sneeze in a person's face; turn your face to one side.

Keep your face and hands clean; wash the hands with soap and water before each meal.

The Roosevelt School of Prosthetic Dentistry has been incorporated at Philadelphia, with capital of \$150,000, for the purpose of establishing and maintaining a school of mechanical dentistry.

Racine, Wis., with 10,000 school children, has established a first-class clinic, served by an all-time dentist.

The death of a patient from gangrene following a dental operation has caused the New York Health department to order a rigid examination of all dental offices as to their sanitary

condition. To be sure, the dentist involved is not blamed for the untoward results; but the dental office should be in every case so far above suspicion that no connection possibly could be even imagined. Read the first sentence again: "Gangrene following a dental operation." Why the connection? To be sure, the most careful operation may stir up latent conditions into harmful activity; but it is impossible that too great care may be exercised. Keep the dental skirts clean.

Twenty-six dental hygienists are now employed in the Bridgeport, Conn., school clinics, all due to the vision and energy of Dr. Alfred C. Fones. Any results? Well, some 20,000 children have been treated, and results most certainly are sufficient to convince even the most skeptical.

First, on the economic side, it shows that retardation—that is, the failure to pass from one grade into another—in 1912 averaged 40; in 1918, after five years of intensive dental care, it has fallen to 20.1 or almost 50 per cent. The following figures will give an idea what it means in dollars and cents. The cost of re-education in Bridgeport for 1912 equaled 42 per cent. of the entire budget. In 1918 it was reduced to 10 per cent.

Second, the effect on the health has been as follows:

Disease	1914	1919
Diphtheria	36.6	18.0
Measles	20.0	7.0
Scarlet fever	14.1	0.9

In addition there has been a reduction of 33.9 per cent. in the decay of permanent teeth.

These figures speak for themselves, but in addition there is the improvement in the general health which has enabled the children to resist the infection of the communicable diseases and as an increase in the average intelligence of the future generation which of course cannot be reduced to figures. The citizens of Bridgeport have certainly made a good investment.

If you're sick or even healthy.

There are germs with movement stealthy,  
Prying 'mongst the poor and wealthy—

See a dentist.

And—bacterial erections

In the teeth and other sections,

Cause appendiceal infections—

See a dentist.

And about that time it is likely to be necessary to see a doctor, also; maybe a surgeon; and an undertaker?

Instruct your adult patients to see that their children use neither grit nor drugs in cleaning their teeth. If called upon, or the occasion offers, do not hesitate to prescribe the right sort of dentifrice. I do not believe that the drug-store is the proper source of supply for tooth powders anyhow, except upon prescription of the dentist. Does the medical man tell his patients to "go to the drug-store and get something for it?"



## THE DENTAL SUMMARY

U. of M. dental clinic is quite enable to meet the demands made upon it.

Kansas City dentists are raising a fund of \$50,000 with which to buy a building and equip a free clinic for the poor children. And they'll do it. K. C. people have a little way of getting what they want.

### A Man Without a Country

#### Peculiar Experience of An American Dentist in Germany During the War.

Dr. Hugo G. Fischer, Chicago, dentist, known in Germany during the war as "A Man Without a Country," is back in Chicago.

After fourteen years in Cologne, he has returned to tell of his experiences with the German military authorities who almost succeeded in drafting him into the German army.

Dr. Fischer, who was born in Chicago, is a graduate of the Northwestern University. After practicing dentistry here for ten or twelve years he went to Cologne with his wife and two children.

In September, 1917, when his pass declaring him an American citizen expired, he was told he was to be drafted into the German army. He asked why.

"You are a Man Without a Country," was the reply.

He appealed to the Spanish embassy at Berlin which was handling the American interests in Germany. A pass was secured for him, attesting that he was an American citizen, but the German military authorities refused to recognize it and still declared him to be "A Man Without a Country."

Dr. Fischer then brought the matter before the Reichstag at Berlin and while they were discussing it with the military authorities he was able to put in an application for a new pass from Washington. Before the matter had been decided in Berlin, the pass had arrived and the Germans let the matter stand as it was.

Dr. Fischer told of the revolutions in Cologne and the mutiny of German sailors at Kiel.

"Late one night one thousand German sailors, fully armed, entered the city of Cologne," he said, "broke into the military prisons and released all of the prisoners. They surrounded barracks, disarmed the soldiers, and destroyed all the ammunition."

### A Warning to Our Readers

October 2, 1919.

EDITOR THE DENTAL SUMMARY: That your readers may use caution in dealing with agents and unreliable houses, I will relate an experience I had, and if you see fit you may publish the same in your good paper.

On December 19th, last year, one ——— claiming to represent the Dental ——— Co., called on me and accepted a check for \$8.65, for goods he had with him. He then found that some of the goods he *did not* have and agreed to send them from his hotel by the morning

mail. This he *did not do* and so the goods left were returned to him and acknowledged.

Some four months later the balance of the goods was sent and I was notified by the Express Co. that I would have to call for them at an office across town. They were notified that I would not accept them and returned them to the sender, who has also acknowledged the receipt of them.

Several requests have been made on this company and this man for a return of the money paid for these goods in advance.

Despite the fact that the goods have all been returned and receipt acknowledged they still have my check for \$8.65 and decline all invitations to refund.

If you think that your readers should be warned against men of this sort you are at liberty to publish this letter.

Yours very truly,

W. A., D.D.S.

Since the above was passed for publication, word comes that the goods have been received—nearly a year after they were bought and paid for, and after the seller knew that this letter was to be published.

### Dr. Frank W. Sage Retires

One of the best known figures in the profession in this part of the country for nearly half a century is that of Dr. Frank W. Sage, of Cincinnati, who writes THE SUMMARY that he has retired from active practice. He writes:

EDITOR DENTAL SUMMARY: Although I have retired from the practice of dentistry, I still feel like being helpful to the young men. I am therefore inclosing an article for THE SUMMARY, which you may use or not.

I earned my first fee at dentistry forty-nine years ago last March. Hung out my first "shingle" a year later, in a little town in central Illinois, Girard, in Macoupin county. Dr. Thos. L. Gilmer, who practiced many years in Chicago, used to come to Girard, occasionally, to pick up a fee or two, but I never saw him after I started. I was after that two years in Girard, three years in Sandusky, O., ever since have practiced here in Cincinnati.

I remain as ever, with regards to all the "boys," old and young.

Yours fraternally,

FRANK W. SAGE.

No. 22 The Parkside,  
Clifton, Cincinnati, Ohio.

### Indiana—First District

Evansville, Ind., November 7.—Officers were elected Thursday at the closing day of the seventh annual meeting of the First District Dental Society, that convened here Wednesday, as follows:

William Bogie, of Vincennes, president; W. C. Boren, of Princeton, vice-president; C. J. Hawkins, of Evansville, secretary and treasurer; J. E. Walker, of Evansville, master of exhibits, and A. L. Ficken, Evansville; W. C. Boren, Princeton; William Bogie, Vincennes; W. J. Hooker, Newburg; W. L. Dorsey, Princeton, and Roy Smiley, Washington, trustees.

## THE DENTAL SUMMARY

### Michigan—Third, Fourth and Fifth

Grand Rapids, Mich., Nov. 7.—The third, fourth and fifth districts of the Michigan Dental society held an all day meeting Friday, at the Hotel Pantlind.

The morning was taken up by registration of delegates and election of officers for the fifth district, which includes Kent, Ionia, Ottawa, Muskegon, Montcalm, Mecosta and Newaygo counties.

N. L. Burke of Grand Rapids was elected president of the fifth district; G. H. Tellman of Muskegon, vice-president, and Dr. J. O. Scott of Holland, secretary and treasurer.

T. W. Mayes of Minneapolis addressed the meeting in the afternoon.

### Illinois—Northern

Rockford, Ill., October 9.—The two-day session of the Northern Illinois Dental Society ended at noon today following the election of F. A. Weld, of Belvidere, as president, and the selection of Elgin as the 1920 meeting place.

Other officers and committee chairmen elected were as follows:

Vice-president, A. B. Culhane, Rockford; secretary, R. P. Culver, DeKalb; treasurer, Edmund Noyes, Chicago; program, C. J. Sowle, Rockford; clinics, Charles Helm, Rockford; local committee, C. J. Underwood, Elgin.

### Kansas—Southeastern

Parsons, Kansas, October 7.—The fifteenth annual meeting of the Southeast Kansas District Dental Association came to a close at five o'clock last evening with the election of officers for the ensuing year and the choosing of Parsons as the place of meeting for the next three years.

The meeting was most enthusiastic and phenomenal in many ways. Nearly one hundred dentists were in attendance and forty new names were added to the roll of the association membership. Out of the 117 dentists in the district about 85 are now association members. In point of attendance, new members, enthusiasm

and program this meeting has never been surpassed.

The new officers elected are: Manager, (term of three years) O. M. Davis, Parsons; president, E. W. Armstrong, Cherryvale; vice-president, J. A. Jent, Pittsburg; secretary, L. Dillman, Pittsburg; treasurer, B. E. Livingston, Chanute; member executive counsel, T. A. Robinson, Coffeyville.

### Indiana—Third District

New Albany, Ind., Oct. 15.—G. N. Little of this city was elected president of the Third District Dental Society at the annual meeting, which closed here this afternoon. The other officers are: J. R. Carnahan, New Albany, vice-president; J. J. Schneider, Jasper, secretary-treasurer, and M. E. Peck, Jeffersonville, chairman of program committee. The meeting next year will be held at West Baden.

### Ohio—North Central

Norwalk, Oct. 24.—The following officers were elected at the annual meeting of the North Central Dental Society here: A. G. Thatcher, Fremont, president; E. S. Braithwaite, Willard, president-elect; H. S. Rodgers, Sandusky, vice-president; J. M. Billmeyer, Norwalk, corresponding secretary; D. D. Smith, Sandusky, recording secretary; Charles Peasley, Norwalk, member of the Board of Directors.

A dinner was served at 6:30 p. m., at the Elks, Club rooms after which Dr. Cottrell, professor of prosthesis, of the Ohio State University, read a paper and conducted a clinic. Twenty-six dentists were present. The committee on oral hygiene reported that a dental chair and equipment had been installed in the Willard public school and that other towns are showing much interest in this movement.

The society embraces the territory of Sandusky, Erie and Huron counties. It is a component of the state and national dental organizations.

Dr. Jesse Miller, Sr., of Maryville, Mo., was elected President of the National Association of Dental Examiners, which has a membership of about two hundred fifty.

### Ohio—Ashland-Richland

Mansfield, Ohio, Oct. 30.—At the meeting of the Ashland-Richland Dental Society held Wednesday afternoon at the office of J. H. Bristor, officers for the year were elected.

B. W. Livingston of Ashland was elected president; J. H. West of this city, vice-president; J. R. Sutter, Ashland, recording secretary; J. F. Clark of this city corresponding secretary; E. F. Cleland of this city, treasurer; W. H.

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CLEVELAND, OHIO



Wolford of this city and R. W. Copeland of Ashland, hold over as delegate and alternate to the state dental society.

C. D. Peck, of Sandusky read a paper on jacket crowns. After the meeting the dentists went to the Vonhof for dinner.

### Illinois—Southern

Benton, Ill., Oct. 30.—Mount Vernon was selected today for the 1920 convention of the Southern Illinois Dental Society. Officers elected were: William A. McKee, Benton, president; A. H. Whittington, Johnston City, vice-president; J. W. Crossman, Duquoin, secretary-treasurer; J. T. Cummings, Metropolis, librarian.

### Tennessee—Nashville

Nashville, Tenn., Nov. 1.—J. J. Vaughn was elected president of the Nashville Dental Society to succeed O. A. Oliver. Other new officers are: J. G. McDowell, vice-president, and Celia Rich, secretary and treasurer.

A. G. Buckner, head of the dental branch of the State Health Department, gave a report of his work in oral hygiene in the state.

The society will hereafter hold a luncheon each Thursday at 12:30 p. m. in addition to the bi-weekly meetings.

### New York—Third and Fourth Districts

The officers of the third and fourth district societies are as follows: Third district, president, George H. Caddick, Albany; vice-presi-

dent, E. H. Gale, Albany; secretary, F. J. McKeon, Albany; treasurer, P. S. Oakley, Troy; correspondent, A. M. Cragin, Kingston; editor, H. C. Fallon, Troy. Fourth district, president, R. C. Pietrie, Johnstown; vice-president, W. D. Rose, Schenectady; secretary, Paul G. Maier, Schenectady; correspondent, Floyd Teller Wilcox, Schenectady; librarian, F. E. Kunker, Albany.

### Western Pennsylvania Odontological Society

Pittsburg, Pa., Oct. 1.—The Odontological Society of Western Pennsylvania held its thirty-eighth annual fall meeting in the Fort Pitt hotel today. Dr. W. A. McCready, of Pittsburg, presided.

Papers were read by dentists in connection with their work. The principal discussion in the afternoon was led by Dr. W. G. Ebersole, Cleveland, O., on "Root-Canal Therapeutics, Sane and Insane."

### Ohio—Corydon-Palmer

Libson, Oct. 8.—J. F. Steele, Lisbon dentist, was honored at Youngstown when he was elected to the presidency of the Corydon-Palmer Dental Society. The society, which is composed of dentists of Columbiana, Mahoning and Trumbull counties, met at Youngstown and with a large attendance present elected the officers for the coming year. Dr. Steel, who is only recently home from France, is president; T. J. Evans of Youngstown, first vice-president;

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has an agreeable, refreshing taste, and this, combined with its well-proven antiseptic properties, makes it a most acceptable solution for use as a spray or wash prior to and after operations on the teeth or gums.

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A small quantity of Listerine evaporated from a watch glass, or other suitable container, will disclose a residue of these beautiful crystals in abundance, as Listerine is a saturated solution of boric acid

May we send a bottle of Listerine to your address, Doctor, for your observation and use?

## Lambert Pharmacal Company

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St. Louis, Mo., U. S. A.

## THE DENTAL SUMMARY

J. H. Chesson, Youngstown, second vice-president; Dr. Boide, East Liverpool, recording secretary; Dr. Nash, Youngstown, treasurer, and W. B. Challis of Lisbon, corresponding secretary.

### War Risk Insurance

#### Additional Rulings on Reinstatement from the Treasury Department

A series of decisions issued by the Director of the Bureau of War Risk Insurance with the approval of the Secretary of the Treasury provides more liberal conditions for reinstatement of lapsed or canceled insurance.

The provisions of Treasury Decision No. 47, allowing eighteen months from the date of discharge for reinstatement upon payment of only two months' premiums on the amount of insurance to be reinstated, are retained. That decision is liberalized, however, by a new provision that men out of the service are permitted to reinstate by merely paying the two months' premiums without making a statement as to health at any time within three calendar months following the month of discharge.

After the three months following the date of discharge have elapsed, a statement from the applicant to the effect that he is in as good health as at the date of discharge or at the expiration of the grace period, whichever is the later date, will be required together with a written application for reinstatement and the tender of two months' premiums on the amount of insurance he wishes to reinstate.

In order to give all former service men whose insurance has lapsed or been canceled, a fair chance to reinstate their insurance, including men who have been out of the service eighteen months or more, and who are therefore barred from reinstatement under the former ruling, a special blanket ruling is made which allows all ex-service men to reinstate their insurance before December 31, 1919, provided that each applicant is in as good health as at date of discharge or at expiration of the grace period, whichever is the later date, and so states in his application. Of course it is necessary that he tender the two months' premiums on the amount of insurance he wishes to reinstate.

Service men who reinstated their insurance by payment of all back premiums prior to July 25, 1919, when the decision requiring payment

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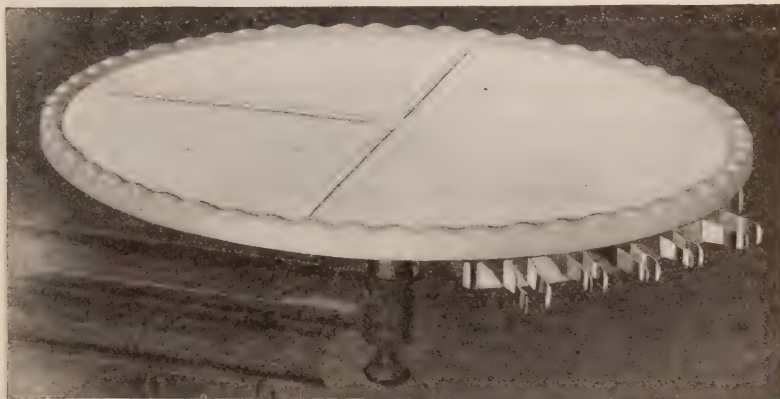
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of only two months' premiums went into effect, upon written application to the Bureau may have any premiums paid in excess of two applied toward the payment of future premiums. For example, if after a policy had lapsed for six

months, a man reinstated and paid six months' premiums instead of two, he may secure credit for four months' premiums.

The provisions for reinstatement do not protect a man until he actually reinstates. If he

## The New R & R Syringe Sterilizer Jar

2½ inches from  
top of Jar to top  
of Glass Rack.

4¾ inches from  
top of Glass  
Rack to bottom  
of Jar.



Provides Space for Two Syringes with Needles and  
Two Novocain Cups or Four Syringes



HE cover is ground to a perfect contact fit of the jar, having inside ledge and top shoulder, preventing evaporation and allowing easy removal; no trouble from sticking because of the glycerin.

The Glass Rack rests upon glass standards, cast in the jar, avoiding the use of metal.

The jar is filled to the required depth with a solution made of two parts pure grain alcohol and one part pure glycerin. The syringes with chucks and iridio-platinum needles attached are suspended in the solution deep enough to immerse the chuck.

The Glass Rack and contents may be lifted out as shown.

The care of a syringe will result uniformly in keeping the instrument in perfect working order.

Ask your Salesman about it

Price, complete, without Syringes  
and Cups .....\$5.00  
Metal Ferrule for holding small  
Syringe..... .35

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